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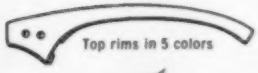

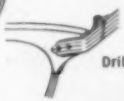

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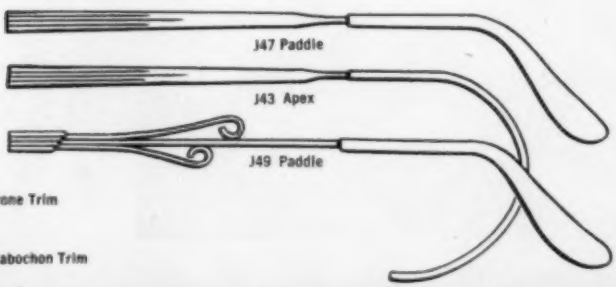

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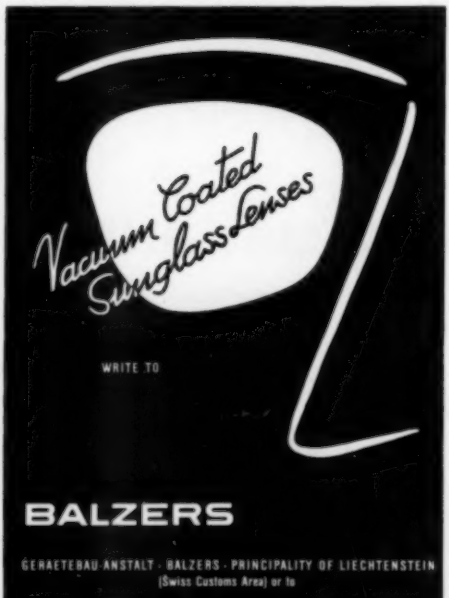

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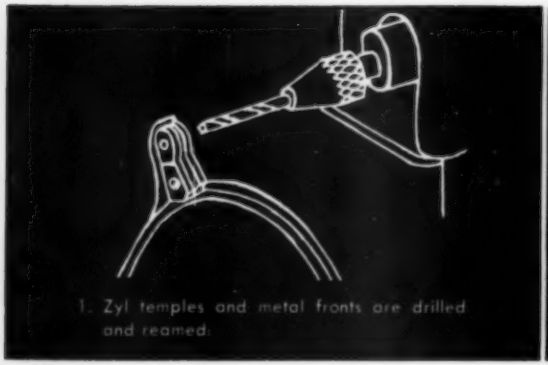

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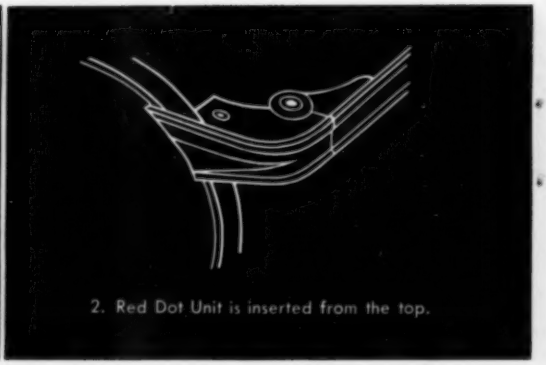

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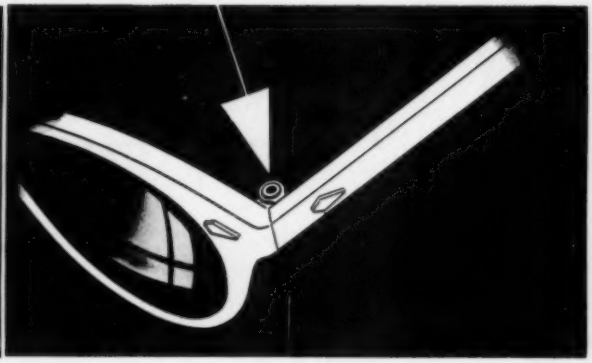
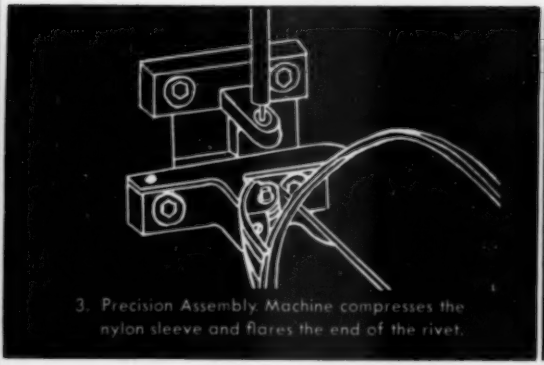


Hinge Tightness



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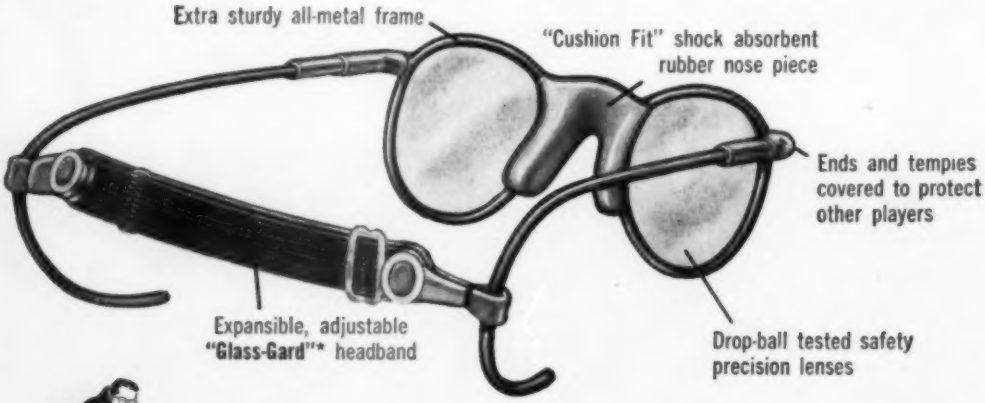
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Robert W. Tubesing

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VISUAL PROBLEMS OF INDUSTRY—PART 1*

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Columbus, Ohio

I. INTRODUCTION

(A) THE CHAIN OF PROCESSES INVOLVED IN SEEING

Seeing an object is a chain of processes. Ordinarily the object is illuminated by placing light sources in the environment and the first link in the chain of processes is the transmission of light to the object. The second link is the reflection of light by the object toward the eye, and the transmission of light from the object to the eye. The third link is the admission of light into the eye and the distribution over the retina. This link includes orienting and focusing the eye to see the object. The fourth link is the initiation of an impression of the object in the retina, and the transmission of this impression to the brain. The fifth link is the interpretation of the impression and the use of this information in performing a job.

(B) REQUIREMENTS FOR EFFICIENT SEEING

Vision cannot be efficient if there are any weak links in this chain of processes.

Therefore the requirements of efficient vision are:

(1) Good visibility, which includes
  (a) good lighting
  (b) proper manipulation of the object by pointing it or orienting it with respect to the light to give it maximum visibility, and
  (c) a clear atmosphere between the object and the observer.
(2) An efficient mechanism for pointing the eyes at the object.
(3) An efficient mechanism for forming a clear image of the object on the retina.

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Part II of this report will appear in the February issue. Part III in the March issue.

†Optometrist. Ph.D., Director of School. Fellow, American Academy of Optometry.

(4) An efficient mechanism for initiating impressions in the retina and transmitting them to the brain.

(5) An efficient mechanism for utilizing visual information in performing a task. When this mechanism is functioning efficiently we call it "seeing with comprehension."

(C) ASPECTS OF PERFORMANCE USED IN EVALUATING EFFICIENT SEEING

In order to evaluate visual efficiency it is necessary to consider two aspects of seeing, namely,

(1) accurate seeing, and

(2) quick seeing.

There are other aspects of efficient seeing but these are the two about which we need be concerned.

We evaluate speed in terms of the volume of work completed and accuracy in terms of the number of errors that are made. In a visual inspection job, for example, we can count the number of pieces inspected and we can also determine the number of pieces which were permitted to pass as satisfactory but which should have been thrown out and the number of good pieces which were thrown out. The types of measures of speed and accuracy which may be used will vary from job to job and the relative importance of speed and accuracy will also vary from job to job. In evaluating performance, we can give separate scores for speed and accuracy or we can use some formula for getting a composite score of performance which attempts to weigh speed and accuracy in accordance with their relative importance for a given job.

There are situations like the use of an inspection machine where the worker has nothing to do with the number of pieces inspected. This is controlled by the machine, and by the industrial engineer who specifies the speed of the machine. This changes the division of responsibility so that the worker does not have to be concerned with speed but the industrial engineer has to be concerned with interrelationships of speed and accuracy.

(D) THE ROLE OF VISUAL EXPERTS IN INDUSTRY

We have to deal with a team of visual experts. This team includes among others an illuminating engineer, a physicist, a meteorologist, a photometrist, a colorimetrist, an optician, an optometrist, an ophthalmologist, an industrial psychologist and an industrial engineer.

The visual expert has to play the role of a trouble shooter: he must track down the sources of inaccuracy and impaired speed at all levels in the process of seeing. From this point of view we have to deal separately with the transmission of information from the object to

the brain and the interpretation of this information once it reaches the brain. It is immaterial to the visual expert whether he is trying to help the worker increase his speed or eliminate his errors or whether he is trying to decide how fast to operate an inspection machine: his job is just about the same. He has to analyze the job in all its aspects to determine what factors are important at each stage in the visual process for the performance of the task.

We have already listed the requirements for efficient seeing but it gives a slightly different approach to the problem if we ask what a visual expert can do in meeting these requirements.

(1) Good visibility. One can use sunlight, or light produced by various artificial sources. He can control the distribution of light in a given environment by the use of windows, screens and diffusers, mirrors, prisms and lenses. He can control the direction from which the light comes and the wavelength composition of the lighting for any given object or group of objects. He can arrange the grouping of objects, and their orientation with respect to the eye and the sources of light to give maximum visibility. He may even be able to give the object a coat of different kind of paint. In the case of an inspection machine, the designer of the machine has all of these factors under his control. Some jobs can be performed better by throwing light on the objects whereas others can be best performed by holding the objects against a bright background. In a task like driving an automobile through fog, one has to be very much concerned about the effect of fog upon the visibility of objects on the highway.

(2) Skillful fixation and convergence. The visual expert can arrange objects within the work environment so that the eye movements that need to be made can be accomplished with speed and accuracy. Use can also be made of mirrors, lenses and prisms. These can be mounted on the face or installed as auxiliary devices on the machinery which the worker is using. In certain instances vision training will accomplish a great deal.

(3) Clear vision. By the use of lenses and magnifying devices a visual expert can do a great deal to improve both speed and accuracy. One can also make use of the fact that the pupil diameter of the eye depends upon the amount of light that enters the eye; by controlling the light in the environment one can control, to a certain extent, the depth of focus of the eye.

(4) Proper functioning of the retina and the visual pathways. To a limited extent the adaptation of the different parts of the two retinas can be controlled by controlling fixation and the distribution

of light in the environment. Otherwise the visual expert has little control over the sensitivity of the retinas, and the efficient functioning of the visual pathways. In the case of permanent impairment of this part of the visual mechanism the visual expert can assist with different kinds of visual aids to make it possible for these people to engage in useful work.

(5) Seeing with comprehension. The speed and accuracy of comprehension is largely dependent upon good visibility and proper fixation and accommodation but much can be gained by a program of training designed to improve comprehension. There are many levels of comprehension and the more advanced the level the more profitable will be a program of training.

(E) OTHER ASPECTS OF SEEING THAN EFFICIENCY

In analyzing the overall problem of seeing, one must include not only efficient seeing, but also safe seeing, comfortable seeing, seeing without effort or fatigue, and seeing without permanent impairment of vision or health. In approaching the overall problem the first objective is to make the performance of the task as efficient as possible. Once the performance is made efficient, it is generally true that one can make the necessary further modifications to render the job comfortable, safe and free from danger of permanent impairment of health and vision without sacrificing any of the elements that make for efficient vision.

II. OBJECTIVE

It is my aim to review the state of our knowledge upon which visual experts can draw in designing equipment and lighting for new jobs, in spotting causes of poor performance, in locating sources of visual discomfort, and needless effort and fatigue, in making maximum use of the eyes in detecting the presence of hazards that lead to accidents, and in preventing permanent impairment of health and vision.

III. PROVIDING LIGHT FOR JOBS THAT REQUIRE PRIMARILY CENTRAL VISION

(A) THE NATURE OF THE PROBLEM

We attempt to illuminate the object or objects in a worker's environment and their backgrounds and surrounds so that the worker can see all that he needs to see in performing his task. There is no single term to designate the body of information which must be revealed to a worker through his eyes in order for him to perform his task. It is represented in the distribution of brightness presented to each eye by a complex pattern of lines, borders, points and gradients. We can aim in the lighting design to make these non-uniformities more visible or make

certain ones of them stand out from the rest, and thus make it easier for the worker to interpret the information that the pattern contains.

We can get down to the heart of the problem by noting that when a worker is performing a given task, his eyes usually make a series of movements and pauses in viewing the objects about which he needs to keep informed. At a given moment during one of the fixation pauses, the details which the eyes have to see are distributed in a certain manner in his field of view. The field of view is divided into central and peripheral portions. What we mean by the central portion of the field of view can be explained by saying that when a person looks at an object he points his eye so that the image of the object falls upon that portion of the retina (the fovea) which provides the best vision of fine detail. We can consider the central portion of the retina to be about 5° wide and to be centered with respect to the fovea. Objects which fall within this region are said to be seen with central vision and those that fall outside are said to be seen with peripheral vision.

The field of view of each eye is a conical space with its apex at the center of the entrance pupil. The fields of view of the two eyes intermesh, and any object which falls within this intermeshing region can be seen with both eyes. The fields of view can be represented by a diagram as shown in Figure 1 where the centers of the two fields are made to

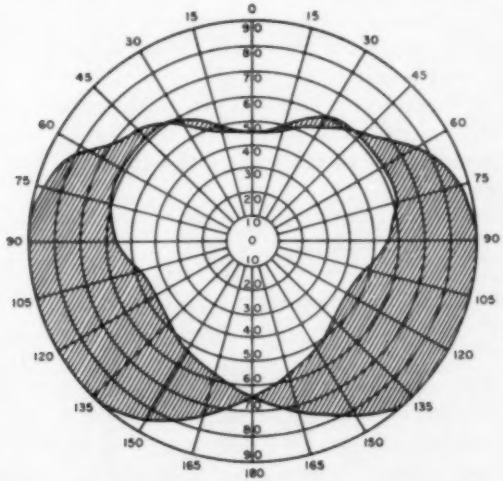

Fig. 1 Overlapping of the fields of view of the right and left eye.

coincide and peripheral directions are represented in terms of meridian and eccentricity. The point of fixation is the common reference point for the two eyes.

If we want to work out a design for the lighting for a given job, we have to select different positions that the worker will occupy and typical points of fixation. For each of these positions and for each direction of fixation, one can arrange the lighting to provide for the highest possible revealability of the things that need to be revealed. In most cases the things that need to be revealed will be contained in the central portion of the field of view. There are, of course, exceptions to this rule in which peripheral vision is quite important, but let us consider for the moment the common case in which central vision is all important.

In attempting to provide good lighting for objects which have to be seen with central vision, it is necessary to pay attention to four aspects of the problem:

(1) Direction from which the light comes.
(2) Differential lighting of objects and backgrounds.
(3) Wavelength composition of the light.
(4) Quantity of light.

(B) DIRECTION OF LIGHTING

It may be well to emphasize again that using light to make an object visible involves two steps. First we have to get the light from the light source to the object and then from the object to the eye. We have to make two analyses of brightness distributions. First we have the distribution of brightness in the field surrounding the object and then we have to make a separate analysis of the distribution of brightness in the field surrounding the entrance pupil of each eye. These two things are easily confused.

The distribution of brightness in the field surrounding the object is important for several reasons:

(1) As shown in Figure 2 the form of an object may be revealed by the gradual transition from light to shade.

(2) If the shadows are sharp, details within the shadows become invisible.

(3) Also as shown in Figure 2, specular reflections can interfere with the visibility of details in the grain of the wood. This is the problem of reflected glare, and is the same type of problem as occurs in the case of semi-polished desk tops. To avoid this type of glare one must rearrange the position of the lights or desk or cover the desk with a matt surface.

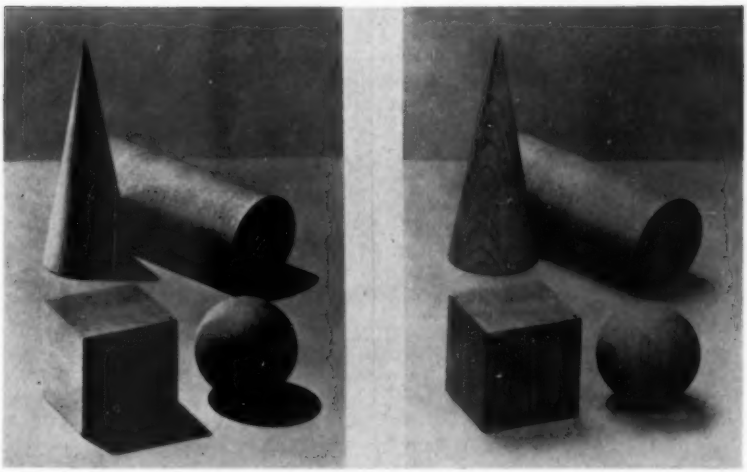

Fig. 2. Harsh shadows produced by directional illumination (A) and soft shadows produced by diffuse illumination. (D. B. Harmon—The Coordinated Classroom.)

(4) Scratches on a metal surface, or cracks on a roller bearing, or glossy ink letters on matt paper all depend for their visibility upon a special arrangement of the direction of lighting.

(C) DIFFERENTIAL LIGHTING OF OBJECTS AND BACKGROUNDS

In many cases such as reading letters printed on white paper, it is not possible to get differential illumination on the object and its background. However, in the many situations like the inspection of wire filaments in electronic tubes it is better to view them silhouetted against a white background.

(D) WAVE LENGTH COMPOSITION

There are many situations in which the wave length composition of the light is of considerable importance in making certain details visible. In the art of glass blowing heated glass will give off a large quantity of sodium light which interferes with seeing and also produces an after-image which continues to interfere with foveal vision when the worker turns to some other task. Wearing didymium glasses solves this problem. Red glasses are used in situations where it is desired to produce or preserve a state of relative dark adaptation. Yellow glasses are used for TV viewing and for hunting. Camouflage is an art which represents this problem in reverse, but in opposing camouflage we have glasses which an observer can use to detect objects in spite of camouflage.

Consideration must be given to the effect of the color of illuminants on the perceived color of objects. The amazing thing is that small changes in the wave length composition of the illuminants in a given environment can produce remarkably large changes in the perceived colors of objects.[1] This is not merely a direct effect dependent on the spectral reflectance of objects, but also an indirect effect dependent upon the chromatic adaptation of the eye. It should be noted that these effects do not involve performance unless the job is one of color matching or one in which color is used as an index. For example, the color of a tomato may be used in judging its ripeness: it may look less ripe under one illuminant than another.

(E) QUANTITY OF ILLUMINATION

The most important factor in lighting is the quantity of light. The question which we always face is how much light is needed for a given job. We can make a first step toward the solution of this problem by trying to determine how much light is needed to yield a given level of performance. It should be emphasized, however, that the final recommendation of quantity of light must take into consideration other factors such as comfort, etc.

The role played by vision in the performance of a job varies so much from job to job that the ideal solution to the problem would be to make an investigation of the relation of illumination and performance for each job.

(1) WESTON'S APPROACH

Since it is not always feasible to analyze each job completely, Weston[2, 3] has approached the problem by investigating the relationship between performance and illumination using a simple type of job which can be investigated in a laboratory. The experiment is described in the I.E.S. Lighting Handbook[4] as follows:

Each subject in the experiment was presented with a worksheet containing a series of variously oriented Landolt broken rings (see Figure 3). The subject was required to cancel out all the Landolt rings having a given gap orientation. The subject worked along each line of rings from left to right as in reading or proof correcting. The duration of each test was one minute or the fraction of one minute as determined by the fastest worker. Each complete series of tests included variation of the size and contrast of the test object and the level of illumination. The angle subtended by the width of the gap in the Landolt ring ranged from one to six minutes. The contrast used varied from 0.28 to 0.97 and the background reflectance was kept constant at 0.90. The level of illumination included the range between 0.5 and 512 footcandles. Pre-

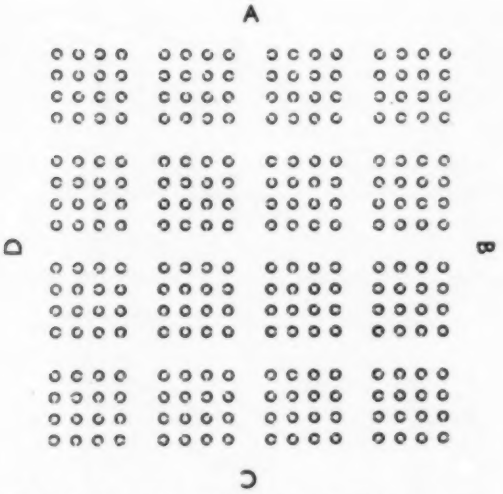

Fig. 3. Worksheet of Landolt rings used by Weston.

cautions were taken to minimize effects of fatigue, and the order of presentation of the test conditions. A special test was included to determine the "action time" involved in performing the physical task of cancelling the rings. This latter value was utilized in a determination of the rating of visual performance.

The number of rings correctly cancelled expressed as a fraction of the total number which should have been cancelled is taken as the accuracy factor. The observed number of rings correctly cancelled per minute is multiplied by the accuracy factor and the result is a number which is an index of gross performance which takes into account both speed and accuracy. This value when corrected for the "action time" becomes a numerical assessment of visual performance.

The performance score can also be expressed in terms of relative performance. For each background reflectance and each size of target, the relative performance for a given level of illumination represents the ratio of the performance at that level of illumination to the performance at the maximum level of illumination, multiplied by 100.

Weston's data are represented in Figure 4. Separate graphs represent data for different sizes of the Landolt ring and the curves in each graph represent data for different levels of contrast. Each curve in Figure 4 represents the relationship between performance and illumination. From these graphs one can determine the amount of illumination re-

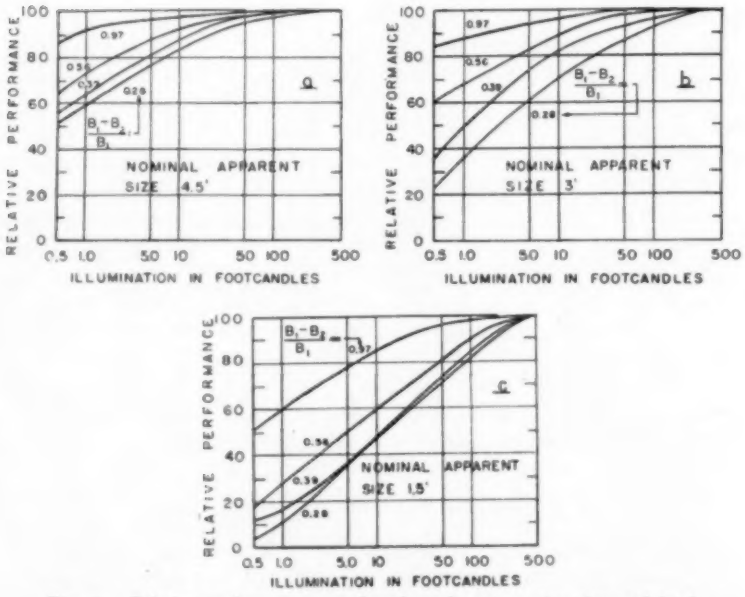

Fig. 4. Relative performance as a function of contrast size ring and level of illumination.

quired for a given level of performance, for a given size and for a given degree of contrast.

The data also can be expressed in the form of graphs such as those shown in Figure 5. From these graphs one can determine for a given size and contrast, the background brightness required for a given level of performance. Then from the reflectance of the background one can determine the level of illumination required.

While Weston's data pertain only to a specific job, it may be assumed that they can be applied to others. The procedure is to select and measure some dimension of the objects looked at as being the size S of the critical detail which corresponds to the width of the gap in the Landolt rings. It is necessary also to measure separately the reflectances of the two adjoining surfaces which correspond to the Landolt ring and its background. Size and reflectance gauges have been incorporated in a device designed by Logan, called an Illumination Levels Indicator.[5] The Munsell Reflectance Scales[6] are also available for determining reflectances.

There are certain limitations to the application of Weston's data. His experiment involved a very limited number of visual skills. Such

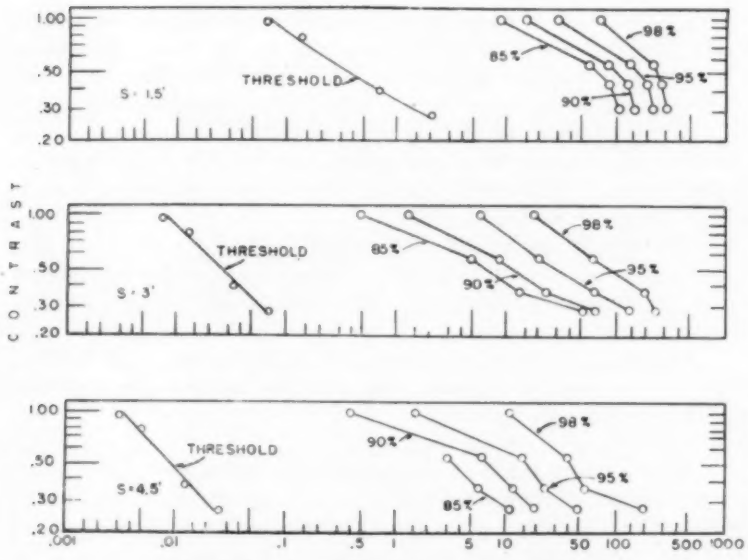

Fig. 5. Relationship of Weston's performance data to the Connor-Ganoung threshold data.

skills as detecting brightness and color differences of objects which are completely separated from each other and judgment of relative size, distance, direction and movement are all affected by the quantity of illumination but are not included in Weston's data.

Weston's data are based upon an evaluation of performance which may not apply to other specific tasks for which illumination is being provided. In certain situations the speed of output is fixed and accuracy only is affected by the level of illumination. In other situations, the task is so simple that errors are unlikely and the speed is the important factor. In still other situations, performances may be evaluated on an entirely different basis. In an inspection operation the percentage of defective items detected may be the all important consideration. If the defects vary in size and contrast, the percentage of defective items will depend upon the ability of the eye to detect low contrast and small details. In such a situation Weston's data do not apply and threshold data may be used to predict whether defects of small size or low contrast will be detected.

A rigorous application of Weston's data would lead to the recom-

mendation of levels of illumination lower than two footcandles. Levels lower than this are generally avoided because they make the worker feel gloomy or depressed in spite of the fact that under these conditions crude tasks can be performed with a high level of visual efficiency.

Certain types of jobs defy analysis in terms of contrast and size of critical detail. In such cases it is difficult and sometimes impossible to apply Weston's method. Even when critical detail does exist there is often a danger in identifying it.

The average age of Weston's subjects was 35 years. Vision was either normal or corrected to normal. Persons with poor or uncorrected vision might require higher levels of illumination than indicated by Weston's data.

In general, the levels of illumination recommended in the lighting codes of this country represent a level of performance ranging from ninety to one hundred percent.

(2) THE THRESHOLD METHOD

Another approach to the problem of determining the level of illumination is based upon the measurement of the threshold of visibility of the critical detail for a given job. The relationship between Weston's data for performance and the Connor-Ganoung[7] threshold data for Landolt rings is given in Figure 5. The threshold is expressed in terms of the contrast required to cause the position of the gap in the Landolt ring to be discerned correctly in 56% of the observations made for eight different positions of the gap. It may be noted that a considerably higher level of illumination is required for a high level of performance than is required for threshold seeing. If the curve representing a given level of performance were always parallel to the threshold curve and displaced the same number of log units to the right of it one could use the amount of displacement to determine the factor by which the threshold illumination would have to be increased to bring the performance to the given level. This condition is only approximated by the data. In general it may be said that increasing the level of illumination above the threshold about 2½ log units will bring the level of performance to the region of 95% to 98%, and will yield values which are consistent with the recommendations included in our present lighting codes. Although this simple approach to the problem offers a certain amount of promise, further research is necessary before it can be determined to be adequate.

In using this approach to the problem, one can make use of an instrument like the Luckiesh-Moss visibility meter, or the Cottrell visibility meter, to make the necessary threshold measurements for use in evaluating the quantity of light needed. This method cannot be used

in situations which involve low levels of contrast.*

*Part II of this report will appear in the February issue.

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OBITUARY

ALFRED B. JORDAN, O.D., 1887-1956

Dr. Alfred B. Jordan, optometrist of Brattleboro, Vermont, died in the Memorial Hospital, Brattleboro, on October 11, 1956, aged 69. He was associated in practice with his daughter, Dr. Katherine Jordan, who joined him in 1934. He was a graduate of Northern Illinois College of Optometry, and was a member of the American Academy of Optometry; an associate fellow of the Distinguished Service Foundation and a member of Beta Sigma Kappa. Dr. Jordan was a past-president of the Vermont Optometric Association and a former member of the Vermont State Board of Examiners in Optometry. In addition to his daughter, he is survived by his widow, a son and one grandson.

TERRY JUDITH PARKINS.

FURTHER STUDIES ON THE A.C.A. RATIO AS MEASURED ON THE ORTHO-RATER*

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Our research on the A.C.A. ratio stems from our ortho-rater testing program in industry. Since the A.C.A. ratio seems to be a visual characteristic which may be innate it would, if correlated to success on a job, be an extremely important measure for predicting success in that job.

It is possible to use the method of Fry[4] to derive the A.C.A. ratio from ortho-rater phoria scores. This means that we can add this information to any industrial or school records in our files. Since data on job success are available on many records, it is possible for us to determine whether the A.C.A. ratio will correlate with success when the phoria measure alone shows no relationship.

A preliminary review of the literature was quite interesting. According to Morgan[15] refractive error, distance heterophoria, amplitude of accommodation and near heterophoria do not affect the ratio; hence it must be considered innate. Alpern,[2] Morgan and Peters,[14] Hofstetter[10] and Fry[6] found that there was no age variation. Tait[17] demonstrated an age variation; however, his measures did not take the bifocal add into consideration. His explanation indicated that the variation was probably the result of the reading add.

Morgan,[15] Hofstetter[10] and Fry[6] found that no change could be expected with training. Variations following training were found to be an artifact by Heath and Hofstetter.[8] The apparent change in the A.C.A. ratio was due to the variability of the phorias in early stages of training. Hofstetter[10] and Morgan[15] found no variation related to ametropia. Morgan[15] warned that no A.C.A. ratio should be considered valid after a lens change of 1.00 D. or more. He stated that after use of glasses has stabilized the phorias, the change in A.C.A. ratio is very small (A 4.00 D. change in lens power resulted in less than 0.6Δ per 1.00 D.).

*Read before the annual meeting of the American Academy of Optometry, Chicago, Illinois, December 11, 1955. For publication in the January, 1957, issue of the AMERICAN JOURNAL OF OPTOMETRY AND ARCHIVES OF AMERICAN ACADEMY OF OPTOMETRY.

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This information made the A.C.A. ratio an extremely desirable measure for our industrial work. In our correlations between visual skills and job success we were constantly hampered by the influence of age and experience upon ability to do a certain job. Since the gain in experience was naturally accompanied by an increase in age, we found that visual abilities frequently dropped as experience built up. This had a veiling effect upon many of our correlations and we found that it was necessary to control age and experience in order to find relationships.

The control of a factor of this type requires removal of contributing cases. Thus it was always necessary for us to reduce the total number of individuals in a study in order to purify results. This reduction in size of the sample is undesirable since we frequently are dealing with small numbers.

Since the A.C.A. ratio was supposedly unaffected by age, it might also be expected to be free of experience bias. The ortho-rater phoria scores could be used to derive the A.C.A. ratio and there seemed to be no strong argument against this method of derivation.

Ortho-rater phoria scores are quite stable. Accommodation and stimulus to fusion are well controlled and psychic nearness has been reduced to a minimum. Thus the ortho-rater phoria measures conform well to the requirements of Hirsch and Bing[9] and Hofstetter.[11]

Actually, our A.C.A. studies had a strange beginning. We were studying the visual abilities of baseball players. Someone had told us that the phoria scores might be a clue to the direction in which a player tended to hit a pitched ball. While the idea seemed a little farfetched we proceeded to test the Rochester Red Wing Team and to attempt to find some relationship between the ortho-rater scores and playing ability. A relationship was found to exist but it did not relate to the phoria and ball direction.

Since emphasis had been placed on this particular factor we tried to exhaust every possibility of working with phoria scores. At this point we remembered our plans for using the A.C.A. ratio in some of our studies. We immediately added these data to our analysis.

Our results were somewhat amazing. The A.C.A. ratio did not predict the direction in which a ball would be hit (and this did not surprise us at all) but it did reveal an unusual trend. It appeared that pitchers had an entirely different range of scores when compared with the rest of the team. This finding just "happened" to be noted when we were arranging players in order of batting ability.

We might have dismissed this situation with a shrug if it had

not been immediately evident that the poor batters had A.C.A. ratios which fell close to the pitchers. Good batters had scores at the other end of the range. In fact it seemed that we could set up A.C.A. "cutting scores" for batting and pitching and select the best players for either job with better than 80% efficiency! (See Figure I.) This made a

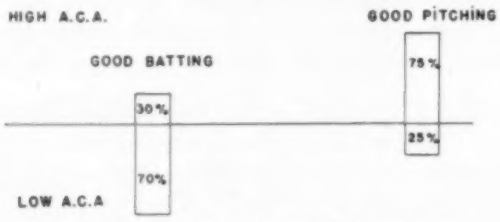

Fig. 1. Batting and pitching A.C.A. tendencies.

beautiful story for it offered a possible explanation of the fact that good pitchers are seldom good batters.

Since the number of players was small we hesitated to place much emphasis on our findings. The decision was that further testing should be done on ball players. At the same time we decided to run industrial and school studies immediately since the measure seemed to have considerable promise.

After consideration of all factors we set up conversion tables which permitted direct reading of the A.C.A. ratio from the two ortho-rater phoria scores. This information was added to our criterion studies and we began the task of running correlations. Results were reported at the Academy meeting in 1953 and were published in this Journal (Davis and Jobe)[3] in October, 1954. Some of the results are summarized briefly below, since they contribute to our findings.

I. TELEPHONE TYPISTS

A group of 56 girls typing from telephone dictation previously had been studied for visual trends. Visual acuity was low and the derived ortho-rater profile had resulted in only a fair selection of good producers. The A.C.A. ratio alone showed a remarkable selection. (See Table I.)

II. ELECTRONIC WORKERS

Two groups of electronic workers doing almost identical jobs were creating a definite production problem. Work differed mainly in size of parts and tolerances. Our ortho-rater profiles derived for the two jobs were similar except for a near point acuity difference of one score point.

TABLE I.

Telephone Typist N = 56
Production and A.C.A. Ratio

Production level in lines	A.C.A. Ratio 2.1 to 4.6	4.7 to 7.6
28-38	11	3
39-46	7	8
47-53	5	9
54-87	3	10

Chi^2 = 9.98. Degrees of Freedom = 3. P = less than 0.02 and more than 0.01.

The median A.C.A. ratio was 4.7. Workers with an A.C.A. ratio above this median had a 2 to 1 advantage over workers below the median.

We found an exactly reverse trend between the relationship of job success and A.C.A. ratio on the two jobs. (See Table II.)

TABLE II.

Electronic Assemblers
Production and A.C.A. Ratio

Production	Median A.C.A. Ratio Transistor Assembly	Vacuum Tube Assembly
Top ⅓	3.4	5.8
Middle ⅓	3.9	4.3
Low ⅓	4.2	3.9

These figures are not adapted to probability analysis.
When divided into 2x2 fold tables
Transistor workers have P of 0.01
Vacuum Tube assemblers have P of about 0.02

There was reason to feel that production could be improved by interchanging the poor workers on the two jobs.

III. CAMERA ASSEMBLY

One study covering 57 workers doing fine camera assembly yielded a different A.C.A. trend. (See Table III.)

TABLE III.

Camera Assemblers N = 57
A.C.A. Ratio and Production

	Production High	Low	Average Production Units
A.C.A. 3.0 to 5.4	25	15	78.0
A.C.A. below 3.0 or over 5.4	4	13	72.1

Chi^2 = 7.10. Degrees of Freedom = 1. P = less than 0.01.

Here a curvilinear relationship was evident with workers at either extreme of the A.C.A. range doing poorer work.

IV. SKILLED TRADESMEN

A group of 142 skilled tradesmen of various classes in one plant also showed a curvilinear trend. (See Table IV.)

TABLE IV.

Skilled Tradesman N = 142
A.C.A. passing range = 2.4 to 6.6

Production Rank	% Outside A.C.A. Range
A	0
B	3.3%
C	14.8%
D	24.4%
E	31.2%

Probability figures cannot be used without bias.

$$\frac{D}{\sigma D_p} \quad (B\&E) = 3.40$$

Here we might question the relationship since combinations of jobs may be masking job differences. A similar picture would have been evident if we had combined the two groups of electronic workers above. Combinations into job families seems undesirable when working with the A.C.A. ratio.

These findings led us to look into the A.C.A. ratio more thoroughly. Fortunately we have thousands of ortho-rater performance records on file. It seemed that broad surveys might contribute to the literature.

In selecting our population for a study of A.C.A. ratios we could draw from our normal industrial sample of about 20,000 cases. This group represents the visual skills of industrial workers of all classes. We could also use a group of records from a large school system covering about 14,000 children in grades 1 through 12. These records were most satisfactory since we knew that testing was at a good level.

Unfortunately we were limited in our use of records since we had no information on the reading add for bifocal wearers. This meant that we must institute certain controls:

1. No workers with bifocals, glasses for only one distance, or irregular use of glasses were included. The population in our survey covered only those individuals who did not wear glasses and individuals with single vision glasses for constant use.
2. Individuals with new glasses (worn less than four months) were also omitted. This is normal procedure in our correlation studies in order to assure that the worker has had adequate time to adapt to his prescription. This is also in line with the findings of Morgan[15] as mentioned earlier.

After the above controls had been initiated we found that we still had a large industrial population. There were now somewhere between 350 and 500 workers at each year of age from 18 through 40. This total group of 10,048 was sufficiently large to afford a sound basis for a population study.

The school population offered approximately 900 children at each age year from 6 to 13 and then continued to age 19 with a drop at each age level until less than 200 were in the oldest group. This provided an excellent overlap with the industrial group.

Using these two populations numerous analyses were run.

I. AGE AND A.C.A. RATIO

Alpern,[2] Morgan and Peters,[14] and Hofstetter[10] and Fry[6] had reported no age variation with the A.C.A. ratio.

On the other hand, Manas[12] states that such a variation exists. He bases his conclusion on a study by Alpern,[2] which set out to prove that the A.C.A. ratio did not *increase* with age as might be expected. While these data covered 1,202 cases age 7 to 47, there is no record regarding use of glasses. It is possible that this was another case similar to the study of Tait[17] where bifocal add was not taken into consideration.

Our analysis of over 10,000 industrial workers resulted in a finding so clear cut that a figure is actually not necessary for illustration. For each age level from 18 to 23 we found an average A.C.A. ratio (as measured on the ortho-rater) of 4.8. For each age level from 24 to 36 the average A.C.A. ratio was 4.7. At 37 the finding again rose to 4.8 and at 40 to 4.9. We had planned to terminate this study at age 40 since our findings had indicated that the majority of workers above this age had subnormal vision if they were not using a reading add.

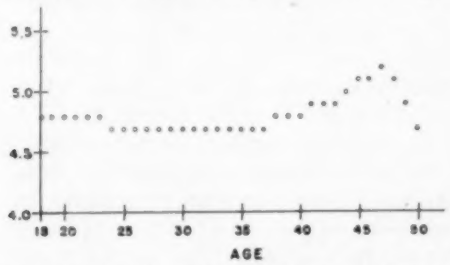

Fig. 2. Average A.C.A. ratio variation with age. N more than 10,000.

Out of curiosity we did continue our scatters with a decreasing number of individuals at each age level. (350 cases at age 40 dropping to 55 at age 50.)

As you can see, Figure II, we found a gradual rise to age 47 and then a decline toward the "normal." The small number of cases over age 50 showed the declining tendency found in the study by Alpern.[2]

The 1/10 point variation between the workers age 24 to 37 and the age level immediately above and below this range was not great enough for statistical significance. Of course the difference could be demonstrated as significant if we increased our cases by grouping in 5 year age intervals. It was difficult to evaluate this finding. If there had been a gradual progression upward or downward, we would have accepted this as an age change. The 1/10 point rise and fall had little meaning.

Then we retraced our footsteps and realized that we had created a possible error. For convenience in computation our conversion tables were set up for a P.D. of 60 mm. In special studies this value was corrected by adding or substracting 0.1 for each mm. of P.D. variation above or below 60. When our surveys were made the P.D. was not available and we worked directly from the conversion score. In our minds this had simply lowered our average finding by about 0.2 since the variation in P.D. could be expected to even out in averaging.

Our presumption on this factor could not be condemned, but we had failed to consider the fact that sex differences could create a difference in average P.D. When we ran a sex breakdown on the material, we found that the 18 to 23 and 37 to 40 group had a considerably larger number of females. This would of course result in a lowering of the 4.8 findings and a correction factor (considering an average P.D. difference of 2 mm. between the sexes) destroyed the age trend completely.

We cannot explain the strange effect of the upper ages but we wonder if inadequate visual acuity at near can account for the effect to some extent. Unquestionably a large portion of this group was unable to accommodate for the near phoria target.

Our inability to use P.D. measures also affected the school population. We found that these children had average A.C.A. ratios ranging from 5.3 for grades 1 and 2 to 5.1 for the high school years. The difference in P.D. adequately explains the downward trend by increasing grade and the heavy preponderance of girls in the high school group helps to explain the difference between the children and the industrial workers. The school children were 1.0Δ more exophoric at distance and 0.5Δ more esophoric at near.

II. CORRELATION WITH OTHER VISUAL SKILLS

While much of the literature states that the A.C.A. ratio is unrelated to the phoria findings, there are also statements that correlation

does exist. Manas[12] finds a —0.85 correlation with near heterophoria (using 100 cases studied by Fry and Haines[7] for his data). A correlation of this magnitude is certainly great enough to make us doubt that no correlation exists.

Using our school cases we ran correlations on the 9,216 children who had phoria measurements. This did not present a difficult problem since our ortho-rater phoria scores are in arbitrary numbers representing a continuum from high esophoria to high exophoria. We must admit that a relationship exists. Our finding indicate:

A.C.A. ratio vs. distance lateral phoria, $r = +0.329$.

A.C.A. ratio vs. near lateral phoria, $r = -0.741$.

Using 5,104 industrial cases in the age range 20 to 29 the correlation between near phoria and the A.C.A. ratio dropped to —0.682. It may be that the value would continue to weaken as the age increased. We hope to look into this at a later date.

Examination of the scattergrams indicated that the exophoric end of the near phoria scale correlated much more strongly than the esophoric end. In other words, low A.C.A. ratios have less independence than high.

Out of curiosity we ran scatters on depth and A.C.A. ratio for the school children. It was immediately obvious that Pearson product—moment r could not be used since the trend was somewhat parabolic. This is illustrated by the following graph. (See Figure III.) We have not calculated the value of eta on this material as yet.

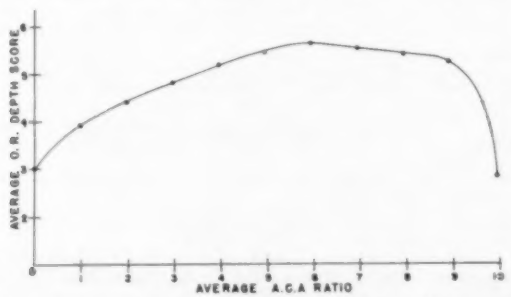

Fig. 3. Depth and A.C.A. ratio for school children. N equals 9,096.

III. RELIABILITY

Our experiments with the A.C.A. ratio did not permit a test-retest. We were delighted when Dr. Ira Schwartz[16] told us of his reliability study using the ortho-rater. He ran a test-retest of 95 men

mostly in the 20 to 30 year age group. Tests were about 15 minutes apart. He found a test-retest r of +0.755. This is quite high for any measure related to a phoria.

IV. VARIATION

Data in our files was combined with the findings of Schwartz to give the standard error of measure equal to 0.54. This is an evidence of the variability to be expected. Actually the value seems quite large; however, the variability is considerably less than could be expected with *any* simple measure of phoria.

Our experience with baseball players tested over a four year period may fit into this picture. Variations of as much as 3.2 were found in the A.C.A. ratio in several cases. The interesting thing about these cases lies in the fact that variations of this type were always accompanied by poor performance on the field. We are beginning to suspect that a change of as much as one full point in A.C.A. ratio may be the fore-warning of a slump in baseball ability.

It is difficult to evaluate this situation. Perhaps physical or mental fatigue enters into the picture. We are interested in learning more about this function which seems to bear a relationship to job performance. Since our studies along this line will probably continue, we shall be interested in any suggestions which can be offered.

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OBITUARY

CARL F. SHEPARD, O.D., 1893-1956

Dr. Carl F. Shepard, member of the faculty, Illinois College of Optometry, died in the American Hospital, Chicago, on November 13, 1956, aged 62. He was a graduate of the Needles Institute, Kansas City, and practiced in Hannibal, Missouri, until 1923 when he moved to Chicago to join the faculty of Northern Illinois College of Optometry. He later became director of research at the college and assisted in the development of many of the techniques now used in orthoptic work. He was a member of the American Academy of Optometry. He also served as director of the college Alumni Association and in addition to his teaching was research editor of the OPTOMETRIC WEEKLY at the time of his death. He is well known in optometry for his contributions to the literature. He is survived by his widow.

TERRY JUDITH PARKINS.

EFFECTS OF CARCHOLIN ON DARK ADAPTATION AND VISUAL PURPLE REGENERATION*

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It is generally accepted that the sensitivity of the human eye in the dark is of great importance in many night activities. It is, therefore, not surprising that attention has been paid to the dark adaptability of aviators and other military personnel. In recent years, a number of workers[1, 3, 5, 6, 7, 8] have engaged in the study of certain substances, which might either improve the dark adaptation in man or accelerate the regeneration of the visual purple in frog or toad. The purpose of this study is to determine the possible effectiveness of carcholin (carbamylcholine chloride) in these respects in both man and toad.

DARK ADAPTATION IN MAN

Methods: A Nagel adaptometer[10] was used for measuring the threshold of dark adaptation. The test field, occupying a visual angle of 3° diameter, was situated 15° above the subject's line of regard. The procedure consisted of two steps. First, both eyes were exposed to the light for preadaptation (200 millilamberts) for 15 minutes: second, the subject remained in the dark and was tested for dark adaptation by manipulating the adjusting wheel of the adaptometer at desired time intervals for the barely imperceptible light intensity of the test field (the light intensity of the presentations were determined before the measurements), the reading of which is given as the logarithm of the brightness in micromicrolamberts ($\mu\mu$l). The source of light preadaptation apparatus and the adaptometer was 100 V.D.C. in our laboratory. Thus, we were able to keep the light intensity quite constant.

Results: The two healthy subjects, F. and H., weighing 67 and 49 KGm. respectively, under study were both well trained on the experimental procedure. The mean value and range of the 5 control experi-

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TABLE I

THE EFFECT OF CARCHOLIN ON DARK ADAPTATION FOR SUBJECT F.

The just imperceptible light intensity (μμl.) was converted into logarithm

Time in Dark (Min.)	Control (Average and Range)	DOSAGE (mg.)																		
		0.2	0.4		0.6					0.8					1.0					
		Time After Carcholin Intake (hr.)																		
		1.0	1.0	7 1/4	1.0	7.0	24 1/2	31.0	49 1/2	1.0	7 1/4	24 1/3	31 1/12	48 1/12	1.0	5 1/2	25.0	32.0	49.0	
1	5.73 5.67-5.76	5.74	5.74	5.74	5.73	5.76	5.72	5.74	5.73	5.72	5.72	5.74	5.74	5.74	5.75	5.74	5.74	5.77	5.75	
3	5.32 5.30-5.35	5.36	5.32	5.36	5.29	5.37	5.28	5.35	5.29	5.26	5.26	5.25	5.37	5.36	5.33	5.23	5.16	5.32	5.33	
5	4.94 4.90-4.98	4.98	4.96	5.02	4.89	4.99	4.91	5.07	4.88	4.77	4.89	4.72	5.03	4.93	4.78	4.77	4.51	4.96	4.94	
8	4.27 4.25-4.31	4.33	4.27	4.28	4.23	4.27	4.25	4.30	4.31	4.17	4.25	4.21	4.29	4.25	4.23	4.17	4.10	4.29	4.21	
10	3.97 3.88-4.01	3.95	4.02	3.98	3.88	3.90	3.89	4.01	3.91	3.70	3.88	3.94	3.96	3.92	3.88	3.79	3.79	3.89	4.02	
15	3.10 3.06-3.13	3.09	3.12	3.12	3.04	3.09	3.05	3.07	3.12	2.99	3.00	3.03	3.08	3.12	3.07	3.04	2.99	3.09	3.10	
20	3.03 3.01-3.05	3.04	3.03	3.05	2.94	2.94	2.91	2.93	3.01	2.89	2.88	3.00	2.99	3.03	2.89	2.84	2.92	2.99	2.99	
25	2.91 2.88-2.98	2.90	2.89	2.98	2.84	2.77	2.78	2.85	2.88	2.60	2.72	2.80	2.82	2.88	2.72	2.72	2.81	2.80	2.90	
30	2.79 2.78-2.80	2.81	2.79	2.79	2.64	2.64	2.66	2.76	2.84	2.56	2.61	2.58	2.68	2.76	2.65	2.63	2.69	2.72	2.76	
35	2.73 2.69-2.76	2.73	2.69	2.69	2.57	2.57	2.64	2.64	2.76	2.47	2.53	2.53	2.61	2.73	2.50	2.49	2.61	2.61	2.72	
40	2.70 2.67-2.73	2.67	2.61	2.64	2.53	2.55	2.58	2.61	2.69	2.34	2.43	2.49	2.56	2.67	2.41	2.40	2.51	2.56	2.67	

ments and the measurements of the dark adaptability after carcholin intake of each subject are given in Tables 1 and 2. It is found that after 0.2 mgm. of carcholin intake no effect on dark adaptation was noticed. An intake of 0.4 mgm. of carcholin also showed no notable change except a tendency for the threshold to decrease slightly. An improved

TABLE II

THE EFFECT OF CARCHOLIN ON DARK ADAPTATION FOR SUBJECT H.

The just imperceptible light intensity (μμl.) was converted into logarithm

Time in Dark (Min.)	Control (Average and Range)	DOSAGE (mg.)																		
		0.2	0.4		0.6					0.8					1.0					
		Time after Carcholin Intake (hr.)																		
		1.0	1.0	7 1/2	1.0	7.0	24 1/6	1.0	7 1/12	24 1/2	31 1/4	1.0	7.0	25.0	32.0	49.0	80 1/2			
1	5.68 5.67-5.71	5.63	5.62	5.66	5.61	5.61	5.63	5.61	5.57	5.61	5.64	5.35	4.96	5.31	5.38	5.42	5.59			
3	5.42 5.35-5.48	5.36	5.35	5.37	5.23	5.23	5.31	5.18	5.25	5.32	5.39	4.43	4.28	4.59	4.89	4.99	5.28			
5	4.95 4.82-5.03	4.89	4.86	4.86	4.63	4.69	4.79	4.63	4.69	4.79	5.02	3.87	4.20	4.29	4.21	4.21	4.79			
8	4.40 4.35-4.44	4.40	4.38	4.38	4.29	4.31	4.38	4.25	4.27	4.28	4.42	3.81	3.57	3.84	3.91	4.21	4.33			
10	4.00 3.95-4.06	4.02	3.97	3.96	3.74	3.81	3.95	3.70	3.81	3.91	3.99	3.19	2.66	3.24	3.51	3.59	3.84			
15	2.97 2.95-3.01	2.98	2.89	2.93	2.85	2.86	2.89	2.74	2.85	2.85	2.93	2.51	2.51	2.61	2.73	2.87	2.89			
20	2.72 2.69-2.78	2.69	2.66	2.72	2.51	2.66	2.69	2.44	2.61	2.61	2.74	2.43	2.29	2.47	2.61	2.70	2.70			
25	2.53 2.50-2.55	2.56	2.49	2.56	2.37	2.39	2.47	2.29	2.39	2.47	2.57	2.25	2.19	2.36	2.39	2.49	2.56			
30	2.46 2.44-2.47	2.47	2.36	2.48	2.17	2.25	2.39	2.10	2.25	2.36	2.51	2.19	2.04	2.20	2.31	2.37	2.39			
35	2.36 2.36-2.37	2.42	2.33	2.40	2.06	2.17	2.33	2.03	2.19	2.29	2.42	2.10	1.99	2.17	2.20	2.31	2.34			
40	2.35 2.31-2.37	2.37	2.29	2.36	2.03	2.14	2.31	1.96	2.17	2.27	2.37	1.94	1.95	2.09	2.17	2.28	2.34			

effect began with a dose of 0.6 mgm. After 0.8 mgm. of carcholin intake, the subjects showed greater improvement in dark adaptation with corresponding lowering of threshold than those who had taken only 0.6 mgm. of the same drug. When the dose increased up to 1.0 mgm., there was no observable improvement as compared with that caused by a dose of 0.8 mgm.

The effect on dark adaptation usually begins about one hour following carcholin intake. The duration of the improvement varied with the dosages used (0.4-1.0 mgm.), namely, the more carcholin given, the longer the effect lasts. Roughly speaking, after 0.8-1.0 mgm. of carcholin was administered, the effect would last for about one to two days. Aside from the improvement of dark adaptation, some side effects such as slight increase of the salivary secretion and belching of gas were noticed.

REGENERATION OF VISUAL PURPLE IN TOAD

Methods: Fresh toads (Bufo melanostictus Schneider) weighing 25-30 gm., were selected for test. A large white porcelain pail with lustrous inner wall which reflected quite uniformly under the daylight lamp (200 W. 100 V.) was used as a container for preadaptation. A large glass dish filled with water was placed over the pail for absorbing the heat radiating from the light source. The toads were then put into the pail and exposed to the light for two hours, care being taken to keep the animals separated. Following exposure to light, 1.0 cc of 0.001% solution of carcholin was injected into the breast lymph sac of the toads in the experimental group. These toads, together with the controls, were immediately put into the dark adaptation apparatus for 90 minutes. Thereafter the toads' retinas were isolated under a red lamp (>650 mμ). The colors of the retinas were compared microscopically with Garten's Table.[2] This procedure gives primary information of the effects of carcholin on the regeneration of the visual purple. Next, the visual purple was extracted and its concentration measured by an electric spectrophotometer.[4, 7] The retinas of each toad were extracted by adding 1.0 cc of 2% sodium glycocholate to them and were stored in the refrigerator for 15 hours. The extinction coefficient (E) of the extract was measured at 500 mμ which was the absorption maximum for the visual purple. The extract was then illuminated for 20 minutes with the day light lamp (100 W. 100 V.) at a distance of 10 cm. After decomposition of the visual purple by illumination, the extinction coefficient was once again measured (E′). The content of the visual purple was obtained from the difference of E and E′.

Results: The accelerating action of carcholin on the regeneration

of visual purple was seen in 8 samples out of 12 as determined by the simplified method (Garten's Table). Among 14 samples, when measured by the spectrophotometer, 10 showed definite acceleration, the results of which are given in Table 3. In a series of experiments for 90

TABLE III

THE EFFECT OF CARCHOLIN (0.001%, 1.0 c.c.) ON THE REGENERATION OF THE VISUAL PURPLE IN TOAD

(90 min. dark adaptation)

No.	Room T. (C°)	Body Wt. (gm.)	E		E - E'		(E-E')/E(%)		EFFECT
			Sample	Control	Sample	Control	Sample	Control	
1	22.0	30.0	0.071	0.066	0.024	0.018	33.7	27.3	Accelerative
2	22.0	30.0	0.058	0.073	0.024	0.029	41.3	39.6	Unclear
3	20.5	25.0	0.046	0.049	0.019	0.021	41.2	42.8	"
4	20.5	25.0	0.074	0.075	0.012	0.032	16.2	42.6	Inhibitory
5	23.0	25.0	0.122	0.068	0.052	0.032	42.6	47.0	"
6	22.0	30.0	0.096	0.057	0.038	0.005	39.6	8.8	Accelerative
7	20.5	25.0	0.028	0.058	0.020	0.015	71.5	25.8	"
8	17.0	28.0	0.040	0.038	0.030	0.015	75.0	39.4	"
9	17.0	28.0	0.042	0.038	0.024	0.020	57.1	52.5	"
10	17.0	28.0	0.064	0.035	0.037	0.017	57.7	48.6	"
11	23.0	25.0	0.066	0.072	0.032	0.024	48.4	33.4	"
12	23.0	25.0	0.046	0.090	0.026	0.028	56.3	31.1	"
13	23.0	25.0	0.087	0.052	0.035	0.016	40.3	30.7	"
14	23.0	25.0	0.108	0.081	0.042	0.019	39.0	28.4	"

minutes' dark adaptation, the average value of E-E′ was 0.030 in the samples and 0.021 in the controls, while the average ratio of E-E′ to E was 47.1 and 35.6 respectively.

The optimal dose of carcholin used for injection was 1.0 cc of 0.001% solution. If 1.0 cc of 0.01% solution was used, the accelerative effect would not be seen; on the contrary, an inhibitory effect took place. Such an adverse phenomenon might be attributed to intoxication caused by the overdose. If the solution was diluted ten times, i.e., 0.0001%, no effect was shown at all.

DICUSSION

It is well known that the speed of the visual purple regeneration is related to dark adaptability: the faster the regeneration, the better the dark adaptability. Our study confirmed this observation, as carcholin not only accelerated the regeneration of the visual purple, but improved the ability of dark adaptation also. On the other hand, the effect of

some other drugs has been found not in accordance with that effect. For example, niacin amide and vitamin C can improve dark adaptation[1, 5] without effect on the regeneration of visual purple.[11] Geramiol in appropriate doses (a drug affecting the autonomic nervous system, used as an olfactory stimulant) always causes an increase of dark adaptability as well as acceleration of pulse rate.[9] Therefore, we believe that the improvement of dark adaptation does not necessarily depend entirely upon the acceleration of the regeneration of visual purple.

SUMMARY

1. A measurement of dark adaptation in man was done with the use of Nagel's adaptometer and an estimation of the visual purple concentration of toads was performed by a simple comparison of the retinal colors with Garten's table and a precise determination with an electric spectrophotometer.
2. In man, 0.6-1.0 mgm. of carcholin intake produced an improved effect on dark adaptability with corresponding lowering of threshold. The duration and strength of such an improvement varies in degree according to the dosages used.
3. Some side effects such as slight increase of salivary secretion and belching of gas is noticed after carcholin intake.
4. In toad, the 1.0 cc of 0.001% carcholin injection (into breast lymph) accelerates the regeneration of visual purple.
5. The relationship between the speed of visual purple regeneration and the dark adaptability is discussed.

Grateful acknowledgment is extended to Lt. Samuel C. McLaughlin, MSC, USNR.

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AN INVITATION TO THE 1957 ACADEMY MEETING

Optometrists around the world are aware of the leading role played by American optometry. Many would like to become acquainted at first hand with modern optometry in the United States and to experience personally the forces which provide its momentum. A trip to the U.S.A. might be arranged, but how can an itinerary be worked out to include as many optometric developments as possible with a minimum of expenditure? Readers of this Journal will immediately recognize the answer: the annual meeting of the American Academy of Optometry with the three-day post-graduate session that precedes it constitutes without question the best vantage point from which to view the contemporary American optometric scene. Within the space of a week and in one building a remarkably complete roster of optometric leaders and educators is assembled to provide in one way or another all the avenues of learning about modern optometric developments that could be wished by an international visitor. Instruction in most aspects

of optometric technique is available in the post-graduate courses at very moderate cost. Objective and subjective examination procedures, orthoptics, physiological and spectacle optics, contact lenses, subnormal vision aids, aniseikonia, pathology—internationally recognized "names" in all these fields give courses at levels ranging from the elementary to the advanced. During the meeting there are sessions of the various sections in which advances in the optometric specialities are discussed in an informal, round-table manner. The educational meetings are occasions unique in optometry. Among the papers read are those by unquestioned world authorities in visual science describing their latest researches. Last but not least there is the fellowship which makes attendance at an Academy meeting such a memorable experience for all.

The next Academy meeting and post-graduate session is to be held at the Drake Hotel in Chicago, December 4-10, 1957. There is no finer opportunitly for a thorough look at American optometry at its best than the events of that week.

GERALD WESTHEIMER

SPECIAL REPORT

EDUCATION, PRACTICE, STATUS AND PROBLEMS OF THE OPHTHALMIC OPTICIAN IN EUROPE*

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Here in the United States the die has been cast that optometry is a profession, related to the health sciences but entirely separate from medicine. We still have some optometrists who are either bucking history or who are taking selfish advantage of the decision that optometry is a profession. In some instances these individuals do not recognize that the decision has already been made; others believe that a mistake has been made in the casting of the die and that a second roll should be made. Unfortunately for this latter point of view, history records few instances in which there has been a return to a previous state with

*Read at the annual Round Table Dinner, American Academy of Optometry, Houston, Texas, December 10, 1956. For publication in the January, 1957, issue of the AMERICAN JOURNAL OF OPTOMETRY AND ARCHIVES OF AMERICAN ACADEMY OF OPTOMETRY.

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a chance to start over. In many instances those going against the current of history do so solely for their own selfish gain, entirely overlooking the problems that would be created, even for them, if all optometrists shared their point of view. In spite of the efforts and the thinking of these obstinate, foolish or dishonest men, the path toward the goal of professionalism was entered shortly after the turn of the century when optometry followed the guiding direction of Prentice and Cross. The fact that optometry misread or overlooked some of the signs set up by Prentice is of interest only as an historical fact.

On the continent of Europe no guide has appeared to point the way. Many forces are acting there which have had little strength in the United States. Optometry in Europe is at a cross roads. There are at least three roads open: on one, the signpost says "profession"; on another, "skilled craft"; and on the third, "business." The force of history is pushing the opthalmic optician** up the road marked "skilled craft." Medicine and public health schemes are pushing the optician up the road of "business." A few individuals have traveled up the road of "profession" and are beckoning to their fellows. Only in Ireland is there a law regulating and hence recognizing directly the opthalmic optician, and consequently legal recognition has little effect.

Let us look at these forces pushing the ophthalmic optician and controlling their actions, perhaps even to a greater extent than the law controls optometry in this country.

One of these forces is custom and the background furnished by the craft guilds. While much of what I have said up to now does not apply to Great Britain, I will use largely the Worshipful Company of Spectacle Makers as an example of the growth and activity of a guild. It is well to remember that in Great Britain today the scheme of apprentice, journeyman, master has lost most of its force in influencing the activity of the ophthalmic optician. On the continent this is not true. The old original guilds have largely disappeared but the forces they created controlling education, and the love for "pomp and circumstance," are still much in evidence. There has been no abrupt change or revolution in the history of the optician; there has been no transplanting to a new soil with different circumstances surrounding as there has been in our history or in the history of optometry in Canada, Australia and New Zealand. The past is present on all sides, both physically and spiritually, keeping its firm grip on the present.

The origin of the guilds is lost in the history of the Dark Ages.

**European terminology for an optometrist.

Certain it is that originally guilds were organizations of congenial people, tied together by some common activity or background, for the purpose of seeing to it that fellow members received a Christian burial when they died and to make sure that widows and orphans received adequate care. In the 11th and 12th centuries the possibility that a loved one might spend eternity in purgatory unless they received a proper death rite was a tremendous force.

In time the common activity which tied the members of guilds together became more and more important and we find the establishment of craft guilds in the 14th and 15th centuries. These guilds set up standards and price control for their products which each guild member had to maintain. They also set up an educational system so that the skill of the craft could be continued from year to year, and so that they could keep down the number of skilled men. One learned a craft by first becoming an apprentice to a master. The number of apprentices each master could have was limited. The length of time and the conditions of servitude as an apprentice were carefully established. When the apprenticeship was successfully concluded, the worker became a journeyman. His skill as a workman was attested to by the guild and these journeymen had some freedom of employment, being able to change under certain circumstances from master to master. After serving as a journeyman for a definite period of time, a skilled craftsman could present his masterpiece to the guild. If it were accepted and approved by the guild he became a master and then he could establish his own shop.

Apparently the first separate spectacle makers' guild was established in France in 1465 and the second in Germany in 1577. This does not mean that there were no spectacle makers before this time but merely means that spectacle makers were members of other guilds as we shall see in the case of the Worshipful Company of Spectacle Makers which was chartered in England by King Charles I, in 1629.

In April, 1628, Robert Allt, citizen and brewer, with 15 other London Spectacle Makers, 12 of whom were members of the Brewers' Company, petitioned King in Council for a Charter of Incorporation. This petition reads in part:

"To the King's Most Excellent Majesty:

"The humble petition of Robert Allt on behalf of himself and other poor spectacle makers in and about the City of London

"Most humbly shewing: That whereas the mystery of making spectacles hath been and still is of good esteem and repute as well in foreign parts beyond the seas as within this Your Majesty's

> Realm of England; and daily doth increase; and many who never served as Apprentices thereunto; and others who have remained some small time apprentices and afterwards departed from their Masters' service; having by indirect and private means attained unto some small insight of the same profession, Do now use many deceipts in the said mystery in making and uttering bad and hurtful wares whereby Your Majesty's subjects are not only merely cosened but sometimes much prejudiced; and Your Petitioners who have served 7 years apprenticeship to the same profession and are good true workmen (of whom some are charged with wives and children) much wronged in their credit, their profession vilified, and they thereby almost utterly undone, unless Your Majesty's gracious favor be extended towards them for their relief herein.
>
> "In tender consideration whereof and forasmuch as all such trade mysteries and manufactures are incorporated into a body politic do still subsist in a comely and commendable manner and those subject to no certain ordinances, rules or government are found by experience to be in short time utterly subverted. And for that your Petitioners conceive a Corporation amongst them to be a means for redress of these their grievances."

I think it is apparent to all that little would need changing in the above petition to make it one that might be on the agenda of any optometric State Association meeting.

The charter granted to "The Master Wardens and Fellowship of Spectacle Makers of London" gave the company very broad powers. It established a means of government for the company, it allowed the company to establish standards, it set up search and seizure provisions for substandard spectacles and for the punishment of those violating any of the rules set down by the company.

Normally speaking, persons became members of the guild by servitude through apprenticeship. However, sons of members might become members directly by patrimony. Later on certain individuals were allowed to purchase membership, redemption. On the continent and in Great Britain of the 15th century it was almost essential that a craftsman of any kind be a freeman of the city in which he practiced his craft. The only way one could be a freeman of the city was to obtain this status through membership in a guild. Thus before the Worshipful Company of Spectacle Makers was formed, spectacle makers had to be members of some other guild. A nucleus was found in the Brewer's Company, probably through the action of the law of patrimony. It is

known that the father of Robert Allt, for example, was a member of the Brewer's Company.

In many European countries as in the City of London, membership in a guild allowed one to take part in governmental activities and to wear livery, ribbons, etc., and to play a role in "pomp and circumstances."

As the number of journeymen increased and as knowledge regarding the mysteries of the various crafts spread, the guilds began to lose power and finally their ability to control their crafts was lost. The guilds in Great Britain gradually became largely social institutions, until near the close of the 19th century, when the old companies began again to take an interest in their old activity. The spectacle makers established an examination which ophthalmic opticians could take voluntarily. Those who passed the examination became members of the company, but more important, their competency was attested to by the Worshipful Company of Spectacle Makers.

In general this craft background of the opthalmic optician is a common historical heritage in European countries. Thus the optician tends to think of himself as a member of the skilled crafts rather than of the learned professions. In Denmark, for example, where there are ophthalmic opticians who call themselves optometrists and practice professionally, each year the opticians take part in the celebration in which the King of Denmark recognizes the new Masters and Journeymen in the various crafts. Many of the present-day associations of opticians have crests, seals, colors, robes, and other regalia which are worn or displayed on formal occasions.

This craft background has a great influence on the education of the continental opthalmic optician. Today, even in Germany, the ophthalmic optician must serve his apprenticeship before he can take the association examination which will serve to certify him as being properly trained. In addition to serving as an apprentice, the future practitioner must attend school. This formal schooling varies in intensity and length from country to country, but averages about two years full time. In school much emphasis is placed on the mechanics of opticianry. Students who graduate can do simple lathe work, surface lenses starting with a block of glass, and design and make spectacle frames in plastic or metal. The students are generally taught the rudiments of subjective sight testing. Only in Germany and Denmark is any attention given to objective sight testing. Nowhere is much thought given to the general field of physiological optics or pathology. In Germany and France there is some emphasis on geometrical and physical

optics as well as mechanical optics. In general, an individual becomes an ophthalmic optician by first becoming employed in an "optical shop" where he starts usually as a messenger and then works up the apprentice scale of stock clerking, surfacing, bench work, dispensing, formal education, refracting, and finally external examination by an association.

In Great Britain and Ireland the situation has evolved one step further, and the training of the ophthalmic optician and his place in society are more nearly like that in the United States. The apprentice system is not in operation. Individuals become opthalmic opticians through the process of formal education.

There are a number of schools in Great Britain all more or less formally a part of technological institutions. I visited Stow College in Glasgow, the College of Technology in Birmingham and Manchester, and Northampton Polytechnic in London. Students are admitted who are 16 years of age or over and who have attained a satisfactory standard of general education. This last requirement can be met by an entrance examination to the particular institute or by holding a general certificate of education issued by the government with an "ordinary pass" in English, Mathematics and Physics. In general, these requirements would be met by some of our college-prep, high school graduates but not by all of them.

The course of study takes three years. The subject-matter is similar to that in the United States except that there is less emphasis on psychology and clinical practice. Only two of the schools are associated with out-patient clinics, Northampton Polytechnic and Stow College. In both London and Glasgow there is a "Refraction Hospital" where students spend about half of their third year. In the other schools students obtain clinical experience by working on paid patients and each other.

When the course of study is completed the student receives a Diploma or Certificate of Completion. The old craft background is not completely dead, as is shown by one of the requirements at Northampton: "As part of his practical work, each student is required to submit for examination a pair of spectacles (frame and lenses) made by himself in the Polytechnic workshops from his own pre-determined prescription."

After receiving his diploma, a student takes the external examination given by any one of five examining bodies which are independent of the state. If he passes the examination, he uses letters after his name to indicate the fact that he is certified by a particular body. These groups are the British Optical Association (FBOA), The Worshipful

Company of Spectacle Makers (FSMC), National Association of Opticians (FNAO), The Scottish Association of Opticians (FSAO), and The Institute of Optical Science (FIOSc). Only the first two groups are of major numerical importance. Certification by one of these groups is essential for recognition under the National Health Act.

This year the National Association of Opticians and the British Optical Association have combined so that from now on there will be only four examining and certifying groups.

The force of socialized medicine has played a formidable role in the status of the opthalmic optician. In Belgium in particular, and in much of continental Europe, this force has been largely destructive to whatever professional aspirations the optician might have had. In Great Britain, on the other hand, the force has been largely constructive, I think. The exact role played by public health care varies somewhat from country to country on the continent, but some aspects of the problem are true of most countries.

Medical practice acts and the optician's craft background tend to emphasize the dispensing and the business aspects of opticianry. In Holland an optician may not legally shine a light into a patient's eye. In Norway he may not use objective methods of sight testing. In Sweden the opticians by agreement with the medical association limit their refracting to subjective testing, for which they charge no fee. In France, objective testing and the use of the ophthalmoscope have doubtful legal status. In Switzerland many opticians voluntarily refrain from objective testing or the use of any ophthalmic instrument other than trial frame and lenses. They do this in order to obtain the good will of medicine, or perhaps it would be better to state that the motivating force is the fear of creating medical ill will.

In many countries there are socialized medical laws. In most cases these laws do not have universal application but are applicable only to individuals who work for industries, or businesses employing a certain minimum number. When these laws were passed the status then existing regarding the optician was that included in the law. Consequently where eye care is included in the public health schemes the optician was recognized only as a dispenser of spectacles. Usually the patient must act as the bookkeeper under these laws. If he needs eye care, he goes to an ophthalmologist and pays the fee, saving the receipt of payment. He then takes the prescription for lenses to an optician recommended by the ophthalmologist. He pays this bill and saves the receipt. The patient then sends the receipts to the governmental social

agency and in due time he is reimbursed for all or part of his costs, depending on whether he chose one of the approved frames and the optician furnished approved lenses. If the patient should go directly to the optician for refraction and spectacles, he would not be compensated for any of his expenses.

In general these health schemes make it good business for the optician to follow the dictates of medicine. As a result some opticians think that any who refract are foolish. The separation of a group of dispensing opticians from the general group has not yet occurred. It would be my guess that this will happen in some countries.

In Great Britain the National Health Act has been in general beneficial to both the ophthalmic optician and to the public. It has tended to make the ophthalmic optician more professional since his activities as far as publicity goes are strictly limited. There is no particular gain in not being professional. The income of the less busy ophthalmic opticians has been raised. Unfortunately that of the busy man has been lessened. There has been some unfortunate tendency to accept mediocrity.

The public has benefited because many who have needed care have obtained it. In fact the rush for free care was so great that the service is no longer free but costs the patient 30 shillings, about $4.20. The fee schedule adopted gives a larger fee for dispensing than for examination. This has had some tendency to emphasize the wrong part of eye care. Here again this state of affairs arose as a result of conditions which existed at the time of the adoption of the Health Act —the fault of the ophthalmic optician.

The ophthalmic optician of England approaches refraction from a slightly different point of view than the optometrist does here. Our approach involves the belief that the measurements we make allow for an analysis of the total visual function and that in general a single vision examination will allow one to write a prescription for lenses, the proper incorporation of prisms if needed, and to indicate the need for visual training. The ophthalmic optician, on the other hand, tends to believe in the step by step approach. First, the refractive error should be corrected. After the patient has worn lenses for several weeks, is the time to decide whether further therapy is needed. The ophthalmic optician also puts much more emphasis on subjective refraction. In general he tends to be suspicious of phoropters and refracters and puts his faith in the trial frame and lenses. He also tends to be a gadgeteer and to collect small, simple instruments. The ophthalmic opticians have a weakness for skiascopes and ophthalmoscopes—a different instrument is frequently used for dynamic skiametry than for static.

The British Ophthalmic Optician is the acknowledged leader in Europe. This is largely due to his more advanced schools and his professional status. In my opinion the next best schools are those in Germany. In many respects these schools are better than those in Britain. The German is more methodical and thorough. Unfortunately there seems to be some lack in the underlying spirit, some uncertainty as to what an ophthalmic optician is. They have not yet moved out of the crossroad. In Denmark the professional spirit is most active on the continent. This is largely due to the influence of the British. Many Danish ophthalmic opticians, after completing their training in Denmark, seek further education in Britain, usually in Scotland.

In 1927 many of the European ophthalmic optician associations set up an international organization known as The International Optical League. This organization was re-constituted in 1951. According to the constitution adopted in London on July 17, 1951, the objects of the League are:

1. The advancement of the science of optometry, refraction or sight-testing for the benefit of mankind.
2. The improvement of the status of (ophthalmic) opticians.
3. The compilation and publication of information relating to the practice of optics and the supply of spectacles in different countries and in particular to:
   (a) The relations between the optical and the medical professions.
   (b) The organization of opticians.
   (c) The training of opticians.
   (d) State and municipal control.
   (e) National Health Service and Social Insurance.
4. The establishment of an International Bureau for advising member optical organizations.
5. To help member optical organizations to safeguard the interests of their own members.
6. To improve methods of training opticians.
7. The holding of International Optical Conferences.
8. To promote research in optics.
9. The interchange of methods of educating the public in the preservation and improvement of eyesight.
10. All relevant matters which from time to time may be approved by a General Meeting.

The membership of the League is open only to optical organizations, approved by the Executive Committee. The majority of the

members of each organization must practice optometry, refraction or sight-testing and have passed optical examinations approved by the Executive Committee of the League. The Executive Committee may, after inquiry and at its discretion, accept any organization which supports the principles of optometry, refraction or sight-testing.

Organizations have membership in the League but voting is by country, with each country having only one vote regardless of the number of organizations which belong from any particular country.

As nearly as I can tell from reading the printed minutes, the following countries are represented by one or more member organizations: Belgium, Denmark, Finland, France, Germany, Great Britain, Holland, Ireland, Israel, Lebanon, Norway, South Africa, Switzerland and Turkey. Of these, only Britain is represented by more than one organization, one of these being the British Chapter of the American Academy of Optometry.

There are two items of general interest in the minutes. One is the proposal by Israel in 1955 that the title of the League be changed to "International Optometric League." Apparently no action was taken on this matter. Another is the proposal to modify the constitution so that associate membership in the League might be available to those organizations representing opticians in countries where refraction cannot be legally performed by them. This proposal will be voted on at the next general meeting of the League, to be held in Amsterdam June 11th to 15th, 1957.

I have returned home convinced that the future of optometry in the world and in the United States is tied up to some real soul-searching and the establishment of fundamental truths. All of us are prone to placate and to arrive at momentary solutions to problems without ever seeking to find out what the fundamental question really is, let alone attempt to answer it. In Europe little or no attempt is made to find solutions to optometric problems by legislation. In contrast, we here seem to try to legislate an answer to every problem. Surely there is a happy medium. The closing of the Columbia School of Optometry, I think, illustrates the danger of seeking legislation at the wrong time.

Optometry should seek to find out what kind of vision care would best suit the needs of the public and not what kind of vision care the public will accept which best suits the needs of optometry. Unfortunately when a conflict exists in the ranks of optometry, any united action generally is around the lowest common denominator rather than the highest. For example, in our dispute generally labeled "commercial vs. professional," discussion generally involves fees, location, window dis-

plays, signs, etc. Fundamentally professionalism is an attitude of mind and associated with this is the type of service rendered. What is needed in my opinion is a program, divorced of fees and other nonessential aspects, of education among optometrists as to what a professional attitude is, based on the real needs of the public. The other factors will then take care of themselves.

Public health schemes in Europe and Britain have played an important role in the status of the ophthalmic optician. A public health plan here would have as much, if not a greater, influence on the practice of optometry than it did in Europe. It therefore behooves organized optometry to prepare the ideal public health plan for eye care, based on, first, the needs of the public and, second, the needs of optometry. The necessary prerequisites and environment for the establishment of such an ideal plan should be studied carefully and every attempt should be made to lay the ground and the environment for the acceptance of the plan. When such a plan is considered by a legislature, optometry must be prepared to answer and to like the answer to the question, "What is the status and attitude right now, just before the adoption of this plan?" If we act as though dispensing were more important than refraction, we will receive fees based on this fact, just as occurred in Great Britain. If we forego visual training and orthoptics, they will not be included. This, too, happened in Britain.

After we have established a plan and after we know what must be done to make the plan acceptable, we must, if we have time, answer the question of whether we should push for public health or oppose it. This action should come after the preparation and not before. Our actions here, too, should be based on what is best for the public. We should not be influenced by the stand of medicine or any other profession. One cannot, of course, overlook political philosophy at this point. Unfortunately too few optometrists have a political philosophy other than that of compromise. We think of ourselves as practical men and hence think compromise is the only way. In my opinion there are limits to compromise. We see all around us the problems created in the world by this so-called practical approach. There are some questions which are like the solution to the problem of the product of two and two. Any other answer than four is wrong.

I have the feeling that a little public health, which we now have, is like telling a woman she is a little pregnant. This means to me that at the end of a gestation period, of some undetermined length, we are going to be faced with the arrival of what will certainly not be a little bundle from heaven unless we have the layette ready in advance.

Before I conclude I would like to add just one thought lest I create the wrong impression. The European ophthalmic optician has much to teach the American optometrist. His skill as an excellent mechanic is not degrading but rather it is elevating. I fear that we here are inclined to overlook the fact that the best examination and the most clever analyses of the problem can be utterly undone by an improper correction. We need more optics, not less. Professionalism is not tied up with the use of instruments rather than tools, with psychology rather than physics, or with visual training rather than dispensing. Optometry, we claim, is a complete visual service. Let's make it that way, and keep it that way.

TRANSACTIONS OF THE AMERICAN ACADEMY OF OPTOMETRY

A department devoted to announcements, reports, appointments, organization data, news, professional problems and ideals, as these relate to the Academy.

ACADEMY HOLDS SUCCESSFUL MEETING

We have been to Texas and it was everything—just as promised. A fine group of Texas optometrists were on hand for the meetings. The quiet, sure, sincere Texas welcome and the ever present willingness to help, made our stay pleasant. A clean, up-to-date hospitable city—a beautiful hotel as our headquarters—and the 70 degree temperatures so seldom experienced during an Academy session made our visit perfect in every way. The food was good and at the Shamrock-Hilton, even in December, one could eat out on a veranda overlooking a gigantic swimming pool.

Dr. and Mrs. Bernard Mazow served at our Houston convention as host and hostess. They were everywhere, doing the big and little things to smooth the path and thus make our visit to their city most pleasant. They were assisted by an able and ever helpful committee. These fine Texans have our grateful thanks.

Dr. Charles Stuart and his faculty of the College of Optometry, University of Houston, conducted countless groups of visitors on tours throughout the College on the beautiful campus of the University, where visitors from all parts of the country and Canada were made welcome. Here we saw the progress made by our youngest undergraduate optometric college—progress that is remarkable indeed, in the few short years this school has been in operation. With additional proper support and

backing from Texas and southern optometrists, this College is sure to grow to become one of the truly outstanding optometric educational centers. The Houston school deserves the help and support from the entire profession, but the leadership in securing this support must come from this area.

During the entire Academy week the attendance was good. More than 300 registered to attend the post-graduate courses and the annual meeting of the Academy. Their general reaction was one of satisfaction, as they took part in the many educational activities.

ROBERT W. TUBESING ELECTED PRESIDENT*

Dr. Robert W. Tubesing, 43, Richmond, Indiana, succeeded Dr. John W. Perry, Jr., as president. Dr. Tubesing has served as vice-president of the Academy during the past two years. He was born in Richmond, April 21, 1913. He attended Earlham College for one year and Northern Illinois College of Optometry where he was a member of the Class of 1933. Following his graduation he practiced in Chicago for two years. Here he was associated with Dr. Irwin M. Borish, then also in practice in Chicago. In December, 1935, he opened his present office in Richmond. He married Maxine Lafuze of Richmond in 1937. They have three children, Gayle 17, Dale 11 and Morris 7. A brother, Richard, is a graduate of the School of Optometry, The Ohio State University. His practice is in Speedway, Indiana.

Dr. Tubesing has been a member of the Academy since 1944. He is a member of the American Optometric Association and a past-president of the Indiana Optometric Association. He has also served as editor of the INDIANA OPTOMETRIST. He is past-president of the Indiana Chapter, American Academy of Optometry, and secretary-treasurer of the Indiana Interprofessional Committee on Eye Care. He is a member of the Professional Advisory Committee to the Indiana Chapter of the National Society for the Prevention of Blindness. He also serves as an elder in the Reid Memorial United Presbyterian Church of Richmond.

Other officers elected at the annual meeting were Dr. Lawrence Fitch, Philadelphia, dean, Pennsylvania State College of Optometry, vice-president, and Dr. Carel C. Koch, Minneapolis, secretary-treasurer. Dr. John D. Perry, Jr., will serve as past-president on the Executive Council which will be made up of the officers and the following members: Dr. Ralph E. Wick, Rapid City, South Dakota; Dr. Donald A. Springer, Anniston, Alabama; Dr. J. Donald Kratz, Souderton, Pennsylvania, and Dr. Monroe J. Hirsch, Ojai, California. Dr. Meredith W. Morgan, Jr., Berkeley, California, chairman of the Editorial Council.

*See Frontispiece.

and Dr. Harold Simmerman, Wenonah, New Jersey, chairman of the Committee on Admittance, will also serve as ex-officio members of the Executive Council. Dr. Wick, in addition to his duties as member of the Council, will serve as chairman of the Papers and Program Committee, assisted by Dr. Springer.

RESOLUTION ON CONTACT LENS PRACTICES

During the annual business session the Academy approved the following resolution dealing with the practice of contact lens fitting and instruction in the art and science of contact lens fitting. Following its passage by the members, this resolution was successfully cleared through the legal department of the Academy before becoming a portion of the approved policy of the Academy.

Whereas, it is the obligation of Fellows of the American Academy of Optometry to disseminate knowledge, and

Whereas, it is also, in the field of education, the obligation of Fellows of the American Academy of Optometry to protect the welfare of the public, and

Whereas, in the opinion of the American Academy of Optometry only individuals who have legal responsibility to the public in the field of refractive eye care, i.e., optometrists and ophthalmologists, should engage in contact lens fitting, therefore be it

Resolved, that Fellows of the American Academy of Optometry may disseminate, teach or in any manner convey knowledge of the art and science of contact lens fitting only to licensed optometrists and ophthalmologists and to students taking courses in accepted and accredited institutions of higher learning existing for the purpose of preparation for licensure in the field of refractive eye care.

SECTION MEETINGS

The following five Academy Sections met on December 9, 10 and 11. Each Section meeting lasted two hours on each of these days. The purpose of these meetings was to bring together specialists to discuss mutual problems dealing with each specialty. The Section meetings are open to all members and guests. At all Section meetings the clinical side of optometric practice is stressed. The programs followed by the Sections at Houston are presented here for the first time.

ORTHOPTIC SECTION

Dr. Paul L. Connolly, Detroit and Dr. John Zettel, Jr., Cincinnati, Co-Chairmen.
Sunday, December 9, 1956. 9:00 A. M. - 11:00 A. M.

An Evaluation of Stereopsis Tests. Louis Anapolle, O.D., Associate in Optometry, Massachusetts College of Optometry, Boston.

The Recording of Results of Visual Training. John Zettel, Jr., O.D., Cincinnati, Ohio.

Monday, December 10, 1956. 9:00 A. M. - 11:00 A. M.

The Polaroid TV Trainer and Other Orthoptic Accessories Including Partial Occluders, Bifocal and Microscopic Lenses. Robert E. Bannon, O.D., and Don B. Whitney, Bureau of Visual Science, American Optical Company, Southbridge, Massachusetts.

Round Table Discussion of Needed Orthoptic Instrumentation, for both Diagnostic and Office Use as well as Home Treatment. Panel: John Zettel, Jr., O.D., Cincinnati; Robert E. Bannon, O.D., Southbridge; Ralph W. LeDrew, O.D., Edmonton, Alberta; Merton C. Flom, O.D., Ph.D., School of Optometry, University of California, Berkeley, and Max Schapero, O.D., Los Angeles College of Optometry, Los Angeles.

Tuesday, December 11, 1956. 9:00 A. M. - 11:00 A. M.

The Specific Muscle Calisthenics Unit. Marshall V. Marks, O.D., Massachusetts College of Optometry, Boston.

CONTACT LENS AND SUB-NORMAL VISION SECTION

Dr. Bernard Mazow, Houston, Chairman

Sunday, December 9, 1956. 9:00 A. M. - 11:00 A. M.

A Bifocal Type Microscope for the Sub-Normal Vision Patient. William Policoff, O.D., Wilkes-Barre, Pennsylvania.

The Effect of Contact Lenses on Phorias, Ductions and the Blur Findings. Newton K. Wesley, O.D., Chicago.

Monday, December 10, 1956. 9:00 A. M - 11:00 A. M.

Procedure for the Inspection and Alternation of Contact Lenses in the Optometric Office. A Workshop conducted by William Feinbloom, O.D., D.O.S., New York City.

Tuesday, December 11, 1956. 9:00 A. M. - 11:00 A. M.

A Further Report on Microlens Fitting. John C. Neill, O.D., Pennsylvania State College of Optometry, Philadelphia.

The Contour Lens. A New Form of Corneal Lens. Norman Bier, F.B.O.A. (London), London, England.

ANISEIKONIC SECTION

Dr. Oscar L. McCulloch, Holyoke, Massachusetts, Chairman

Sunday, December 9, 1956. 9:00 A. M. - 11:00 A. M.

Recent Developments in the Field of Aniseikonia. Robert E. Bannon, O.D., Bureau of Visual Science, American Optical Company, Southbridge, Massachusetts.

Manipulation of Eikonic Quantities in Examination and Prescription. Harold M. Fisher, O.D., New York City.

Monday, December 10, 1956. 9:00 A. M. - 11:00 A. M.

Screening Tests for Aniseikonia. Benton Freeman, O.D., Allentown, Pennsylvania.

Preparation of Aniseikonia Literature for the Layman. Discussion lead by Oscar L. McCulloch, Chairman.

Tuesday, December 11, 1956. 9:00 A. M. - 11:00 A. M.

Practice Management, economics, techniques and problems in Aniseikonia in Optometric Practice. Forum Discussion.

Case Reports. Forum Discussion.

SECTION ON OCCUPATIONAL OPTOMETRY

Dr. Herman Sager, Sperry Gyroscope Company, Lake Success, New York, Chairman

Sunday, December 9, 1956. 9:00 A. M. - 11:00 A. M.

The Section on Occupational Optometry is cognizant of the numerous problems that are fast developing in this specialized field. The Section feels, therefore, that it is appropriate at this time to have a round table conference to discuss the Industrial Vision picture as it appears today.

The participants of this discussion will include: Richard Feinberg, O.D.,

Ph.D., Titmus Optical Company, Petersburg, Virginia; Sylvester Guth, M.S., D.O.S., General Electric Company, Cleveland; Henry W. Hofstetter, O.D., Ph.D., Division of Optometry, Indiana University; Arnold Langsen, O.D., Wright Aeronautical Company, New Jersey, and Herman Sager, O.D., Sperry Gyroscope Company, Lake Success, New York.

Monday, December 10, 1956. 9:00 A. M. - 11:00 A. M.

Continuation of Sunday program.

Tuesday, December 11, 1956. 9:00 A. M. - 11:00 A. M.

Ophthalmic Materials Used in Industry.

Research in Occupational Vision.

Recommendations for Improvement of Vision Testing Techniques and Procedures Used in Industry Today.

PATHOLOGY SECTION

Dr. Monroe J. Hirsch, Ojai, California, Chairman

Sunday, December 9, 1956. 9:00 A. M. - 11:00 A. M.

Pathology in the Practice of Optometry. Panel Discussion led by Carel C. Koch, O.D., Minneapolis; John D. Perry, Jr., O.D., Winston-Salem, North Carolina; Donald A. Springer, O.D., Anniston, Alabama; Robert W. Tubesing, O.D., Richmond, Indiana, and Ralph E. Wick, O.D., Rapid City, South Dakota.

Monday, December 10, 1956. 9:00 A. M. - 11:00 A. M.

Diagnostic Uses of the ERG. Leo Lipitz, M.D., The Ohio State University, Columbus.

Three 16 mm. Kodachrome Films of Observed Clinical Patients. Presented by Merton C. Flom, O.D., Ph.D., School of Optometry, University of California, Berkeley, and Monroe J. Hirsch, O.D., Ph.D., Ojai, California.

(1) Marcus-Gunn Jaw Winking Phenomenon. (Flom)

(2) Pseudo-Graeffe Lid Phenomenon. (Flom)

(3) Latent Nystagmus. (Hirsch)

The Art of Observation. David Michaels, O.D., M.S., Illinois College of Optometry, Chicago. (To be read by Alfred A. Rosenbloom, O.D., M.S., Illinois College of Optometry, Chicago.)

Tuesday, December 11, 1956. 9:00 A. M. - 11:00 A. M.

Patient Referral. J. P. Nesset, O.D., Wolfe Eye Clinic, Marshalltown, Iowa.

Relationship Between Corneal and Scleral Tonometry. Monroe J. Hirsch, O.D., Ph.D., Ojai, California, and Merton C. Flom, O.D., Ph.D., School of Optometry, University of California, Berkeley.

Kodachrome Slide Presentation of External Pathology. Jay Enoch, O.D., School of Optometry, The Ohio State University, Columbus, and Harold Simmerman, O.D., Pennsylvania State College of Optometry, Philadelphia.

MEETINGS

All but one of the 42 post-graduate courses* were given as scheduled. The one cancellation was due to an inability of the instructor to get to Houston because of illness. In general the courses were well filled—many being sold out before the meeting started.

All original papers were presented as scheduled during the regular Academy sessions. These papers** will appear in coming issues of this publication.

*V. J. Ellerbrock and D. G. Hummel. Post-Graduate Courses, American Academy of Optometry, Shamrock Hilton Hotel, Houston, Texas. Am. J. Optom. & Arch. Am. Acad. Optom. 33. 7. 387-395. 1956.

**J. Donald Kratz. Program of the American Academy of Optometry. Shamrock Hilton Hotel, Houston, Texas. Am. J. Optom. & Arch. Am. Acad. Optom. 33. 11. 621-623. 1956.

THE EXECUTIVE COUNCIL

During the meeting of the Executive Council at Houston several significant actions were taken. These were:

- The nomination and election of Dr. E. Leroy Ryer, New York City, to receive the Honorary Life Fellowship Award of the Academy at the 1957 annual meeting of the Academy at Chicago in December of 1957. This award was voted Dr. Ryer for (1) his contributions to the literature and to clinical optometry in the fields of visual acuity findings and ophthalmometry, and (2) for his early and effective leadership in establishing practice standards for optometrists.
- After reviewing reports dealing with the International Optical League, the Executive Council voted to apply for membership in the League, on the part of the American Academy of Optometry.
- Approved the plans and program for Post-Graduate Courses to be given in December, 1957, at the Drake Hotel, Chicago.
- Approved the suggestion of the Committee on Admittance that in those cases of optometrists who meet all other Academy requirements that those future applicants who have passed the National Board of Examiners in Optometry have their clinical and written portions of Academy requirements for Fellowship waived.

ANNUAL ROUND-TABLE DINNER

Following an hour of cocktails, the annual formal Round-Table Dinner of the Academy was held in the main ballroom of the hotel. Members and guests were seated, as is usual at these affairs, at round tables each seating eight dinner guests. At the head table were Dr. John D. Perry, Jr., president of the Academy who presided. Dr. Meredith W. Morgan, Jr., who made the principal address of the evening. General A. D. Bruce, chancellor, University of Houston: Dr. Rupert E. Flower, president, American Optometric Association: Dr. Clanton Williams, president, University of Houston: Dr. Robert W. Tubesing, president-elect, American Academy of Optometry: Dr. Harold W. Fisher, president, National Board of Examiners in Optometry: Dr. Charles Stuart, dean, College of Optometry, University of Houston: Dr. William Greenspon, chairman, Council on Education, American Optometric Association, and Dr. Harold Simmerman, chairman, Committee on Admittance, American Academy of Optometry.

Dr. Morgan's talk is presented elsewhere in this issue. He dealt with the practice of optometry over-seas and followed his talk with a series of colored slides showing optometric personalities and places of interest in Europe. General Bruce and Dr. Clanton Williams spoke of the University of Houston, its background and its future plans, as

well as its financial problems as it is a non-tax supported University. Dr. Flower called upon all optometrists to support the far-reaching programs of the A.O.A. and pointed out that Academy leadership must do its full part in bringing these essential programs dealing with economics and legislative work to successful conclusions. Dr. Tubesing presented Dr. Perry, who presided at the dinner, a gift from the Academy and expressed for the membership its appreciation for his fine work as President during the past two years. Dr. Harold Simmerman then introduced a group of Academy applicants who had successfully completed their work and who were newly elected Fellows of the Academy. These new members were:

Dr. A. E. Bellune, Masonic Temple. Greenville, South Carolina.
Dr. John James Crozier, 3022 Frankford Ave., Philadelphia, Pennsylvania.
Dr. Robert K. Eakin, 6009 West Blvd., Los Angeles, California.
Dr. Charles B. Huelsman, 100 McGuffey Hall, Miami University, Oxford, Ohio.
Dr. Stanley J. Lieberman, 44 Main St., Flemington, New Jersey.
Dr. Sidney A. Mintz, 77 Broadway, Paterson, New Jersey.
Dr. Robert Jay Morrison, 505 N. Second St., Harrisburg, Pennsylvania.
Dr. Leonard Pacheco, 1307 Acushnet Ave., New Bedford, Massachusetts.
Dr. James N. Rowland, Hancock Bldg., Oxford, North Carolina.
Dr. Richard C. Schiller, Medical Arts Center, Marshalltown, Iowa.
Dr. Joseph F. Schmidt, 213 Schiller St., Herman, Missouri.
Dr. Ira Schwartz, 189 Thames St., Groton, Connecticut.
Lt. Michele J. Testa, U.S.N., MSC., E.E.N. & T. Dispensary, N.A.S., Norfolk, Virginia.
Dr. Ira S. Vineburg, 604 Grand Ave., Asbury Park, New Jersey.
Dr. Oscar W. Weinstein, 326 W. State St., Rockford, Illinois.
Dr. Richard C. Whitfield, 208 E. Mason St., Franklinton, North Carolina.
Dr. Ralph E. Wolmer, 694 Main St., Willimantic, Connecticut.

Late Tuesday afternoon, after the last of the original papers had been presented, a large group of members boarded cars and a bus to take them south of Houston to the famous battlegrounds where Texas won its independence from Mexico. The drive followed the ship canal and ended at the San Jacinto Inn where members enjoyed a splendid Gulf Sea Food dinner. The group returned to Houston late the same

evening. Next morning those taking the Mexican tour left from the beautiful International Houston Air Port for a seven-day vacation in and around Mexico City.

In every respect the Academy week at Houston was a success. The post-graduate courses met every expectation. The Section Meetings were well attended and the reports on these were good. The original papers presented at the regular Academy sessions came up to their usual high standards. A fine feeling of harmony was in evidence throughout the meeting and many expressions of pleasure were heard from those who had enjoyed the many and varied Houston educational programs.

CAREL C. KOCH.

ANNUAL REPORT OF PRESIDENT*

John D. Perry, Jr.†
Winston-Salem, North Carolina

The 36th Annual Meeting of the American Academy of Optometry is now under way and it is my very happy privilege to extend a hearty welcome to you all, both Fellows and guests.

It is most heartening to us, your officers and committee men, that so many of you have come from so far to attend this great educational meeting. Your very presence attests your interest, and we are sure you will feel that your time is being well spent during this week in Houston. We want your wholehearted participation in the program we have planned for you this year. Just as in years past we have a program composed of the finest and most up to date papers available. But, the maximum degree of mutual benefit will be reached only through individual attention and discussion of the clinical and research material presented.

I am happy to report that the Post-Graduate Courses that were held for the three preceding days were again an overwhelming success. Optometrists in large numbers from 23 states, and two provinces of Canada, attended these courses. More than 2,000 hours of clinical instruction were provided in 42 different subjects. The success of these courses is due to the able direction of Dr. Vincent J. Ellerbrock and his committee. Post-graduate courses such as these are the product of

*Read before the annual meeting of the American Academy of Optometry, Houston, Texas, December 8, 1956. For publication in the January, 1957, issue of the AMERICAN JOURNAL OF OPTOMETRY AND ARCHIVES OF AMERICAN ACADEMY OF OPTOMETRY.

†Optometrist. Fellow, American Academy of Optometry.

long range planning and a most careful selection of instructors. We felt last year's courses were "tops" and could not be equaled, but Dr. Ellerbrock has done it again! . . . and we are most grateful. Credit also for the success of the Post-graduate Courses is due Dr. D. G. Hummel and his committee, who so dilligently handled the registration and the administrative portion of this program.

Your President and Secretary again this year attended the 59th Congress of the American Optometric Association at Miami Beach. Three other members of the Executive Council were there, and approximately 100 Fellows of the Academy. During the Congress an Academy luncheon was held and most of the Fellows attending the Congress were present along with a number of visitors. A brief outline of the proposed Houston program was given and this was followed by an enjoyoble hour of fellowship.

I think we are all aware of the situation that confronts our profession at this time with the low student enrollment in our optometric schools and colleges. With the population of the United States increasing, more serious problems will face us if we do not change this enrollment picture. Academy members must be active in all programs working to improve this situation.

During the year the Committee on Chapters, under the direction of vice-president Dr. R. W. Tubesing, drew up a proposed constitution and by-laws for use by Chapters. Each Chapter is requested to adopt these articles and operate according to them so as to eliminate possible differences in standards between Chapters. I am happy to report that our New Jersey Chapter has been the first to adopt this new Constitution. I hope the North Carolina Chapter will follow suit at its next meeting.

Dr. J. Donald Kratz, Chairman of the Papers and Program Committee, will soon make his report concerning the program to be offered during the next four days. We are particularly proud of the scope and content of the papers to be presented this year. The arranging of such a program requires vision, ability, hard work and "friendly persuasion" and our thanks go to Dr. Kratz for a job superbly done.

Each of the five Section Chairmen have also arranged a top flight program for their particular specialty and in just a few moments they will in turn give you a briefing of their program which will take place from 9:00 A.M. until 11:00 A.M. for the next three mornings. You may attend the Section in which you have the greatest interest.

In the Secretary's report it is shown that we have taken in about the same number of new Fellows in 1956 as were taken in during 1955.

I believe the Academy should show an increase in the number of new members voted into Fellowship each year. For this, the responsibility lies with each of us as individual Fellows. As one of my last official acts, I want to request each of you to propose at least one eligible optometrist for Fellowship during 1957. That is the only way the Academy will continue to grow. The Committee on Admittance has done a magnificent job this year under the leadership of Dr. Harold Simmerman and his Regional Chairmen, but it is not up to the Committee on Admittance to do the recruiting, that is the responsibility of each individual Fellow.

And now a word of appreciation for our Secretary, Dr. Carel C. Koch. Each year the activities and problems of the Academy become more numerous and more complicated . . . and more and more of these fall on the shoulders of the Secretary. This job requires the organization of an efficiency expert, the finesse of a diplomat and the dependability of the Rock of Gibralter, and our Secretary possesses these qualities in large measure. Carel, you have meant much to the Academy and to me. We do appreciate all you are doing.

And, finally, I want to express my appreciation for the privilege of serving as your President. I have tried to justify your confidence in me and I hope that in some small way I have been instrumental in advancing the cause of optometry and the ideals of the Academy. These two years are ones never-to-be-forgotten. They have been years of learning for me. I have come in contact with so many different phases of our work—its problems, its progress, its achievements, its failings, its attempts and its needs. They have been years of enrichment too, a wider circle of friends in my chosen profession and a closer bond with optometrists everywhere as we are drawn together by our mutual interests.

No President has ever received finer cooperation than I have from all committees and from every member of the Executive Council and I am indebted to them each and every one for any accomplishments of the past two years. Our achievements have been brought about by unity of purpose and a sincere desire for service on the part of these fine men. I am proud of the Academy . . . as I know you are. But we must continue to advance. This year we have been confronted with problems but problems are a part of growth. Organizations that boast of no problems are dead. It is one's attitude toward the problem that makes the difference. Recently there has been a breakdown of interprofessional relations. But another year is ahead. 1957 will be a year of challenge . . . a year when we will rally to the cause of our pro-

fession. Let us resolve to lead the way for optometry on a higher plane than ever before and thus to pave the way for better inter-professional relations in the future. This is again a matter for the individual, as better relations with other professions will follow when all optometrists adopt a professional code of ethics and discipline themselves to practice as their code demands. A professional man accepts great responsibility to his fellowman and he must show himself worthy of the trust bestowed on him. When all optometrists practice in this manner, the door of inter-professional relations will again be open and the public will benefit thereby. May 1957 see great strides towards the realization of this goal.

CURRENT COMMENTS

Terry Judith Parkins
Editorial Assistant

Optometrists will confer a favor by sending news items of general interest for this department: such as relate to new instruments, clinical techniques, education, visual health and optometric legislation and organization.

ORTHOPTIC WORK

The Keystone View Company, Meadville, Pennsylvania, is well known to optometrists as producers of stereoscopic slides and equipment used for visual screening and orthoptic techniques. Over the years Keystone has done much to popularize orthoptics among optometrists and their representatives have worked with many serious students of orthoptic procedures in developing special slides and devices to further this aspect of clinical optometry.

Among optometrists the Keystone people have developed a reputation for their helpful assistance in solving special problems, particularly as these relate to the deficiencies of accommodative-convergence relationships and how to test, measure and correct them. Recently, Keystone has issued a four point proposal to optometrists. These proposals relate to orthoptic work and are a follows:

1. Optometrists who give complete optometric care including visual training have become the leading optometrists in their communities, respected professional men—not prosthetic technicians who sell eye glasses.
2. Optometrists who give complete visual care enjoy greater practice stability and usually higher incomes than other ethical optometrists who limit their practices to the fitting of lenses.
3. Optometrists who give complete visual care develop practices from the more stable and higher income groups in their communities—from professional people and from those in the community who want the best for their children.

4. The practice building effects of incorporating visual training in an optometric practice show up in the great number of referrals visual training patients direct to their doctor. It has been reliably estimated that each visual training patient sends from 3 to 7 patients to consult "his" optometrist.

In some respects these proposals are good and certainly they should be studied carefully and conservatively. In other respects these proposals almost seem to make orthoptic techniques the cure-all for most visual problems, which of course, is not true. In considering these proposals we must allow for the natural enthusiasms of the market place, as the Keystone people are properly proud of their already long list of contributions to clinical orthoptic training.

In reviewing these proposals optometrists should consider their possibilities in the light of accepted anatomical, physiological and psychological knowledge. Clinical results too, should be included, but these must be accepted with care, as we are all aware that symptoms disappear occasionally when nothing really significant has been done for the patient. The occasional use of placebos in medicine is an example. But this example should not be seized upon by those enthusiastic exponents of orthoptics as an excuse to provide orthoptic treatments for willing patients, if their need is not evident. There is a difference between advising an occasional patient to take a few inexpensive capsules, and advising one to take a series of time consuming and costly treatments.

As long as this form of treatment is supplied only to that group of cases known to benefit by the therapy, much good will result. When orthoptics are suggested for nearly any and all forms of visual problems one is free to question the motive of the optometrist, in the light of present knowledge and clinical evidence.

Optometrists have done much good work with orthoptic techniques. In the hands of the serious practitioner who selects his patients with care and who understands the limitations as well as the advantages of this work, these procedures can be, and are, of great value. Orthoptic techniques, however, must be considered only as a means to a clinical end. When they fail to promptly show the expected results they should be discontinued.

LOOKING BACK

Our April, 1957, issue will mark some sort of a milestone in the life of this publication. It will be our 400th consecutive monthly issue. Volume 1, Number 1, came out in January, 1924, a total of 400 months ago. More than 33 years, and for all of that time our hard-working chief, editor Koch has been riding herd on all of the things that make a publication like this possible. I thought we ought to make a little fuss over this coming April issue, but he said to forget it—but

be sure its a good issue—a readable and useful issue.

I was looking over the January issue for the year 1924. I find the authors of the two leading papers are now both dead. Each was an outstanding optometrist and both were members of the Academy. One of the editorials in this first issue deals with the Rochester School of Optometry. This was one of our early great educational centers. It was run by Dr. Ernest Petry and had a fine and loyal faculty. Many of today's leaders in optometry came into the profession through this school.

I was interested to see that Dr. Albert H. Nordland was associate editor back in those times. He was in private practice then. He is now president of the Twin City Optical Company and a loyal supporter of everything good in optometry. Another of the men who helped start the Journal was Dr. Leslie W. Myers of Minneapolis, who, over the years since 1924, has become nationally known as the leading figure in the Benson Optical Company. Leslie Myers is now chairman of the board of this large independent optical laboratory, with its many, many branches.

Among the first advertisers were the Geneva Optical Company: Walman: Irving & Beard: Twin City: Twin-Ports: Benson: American Optical Company and Riggs (now Bausch & Lomb). Archer joined the group of advertisers in February, 1924. New Era in March. The Ernest Kiekenapp Record Card was first advertised here, also in the March, 1924, issue. Dr. Kiekennapp was then secretary of the A.O.A. He was in private practice in Faribault, Minnesota, and his job with the A.O.A. was a part time one. Time does fly. B & L Punktal lenses were being pushed—several advertisers mention them. In the August, 1924, issue, Dr. A. M. Skeffington, Kearney, Nebraska, became one of the associate editors. He stayed on the staff until he gave up his practice in Kearney to enter into a lifetime of lecture service for his profession. Other advertisers came in by early summer—Eastern Optical Company; Simpson-Walther Lens Company and the H. J. Stead Company (bifocal makers). Slowly but surely the Journal grew, both in size and influence and now 33 years later it is evident that the efforts that were put into those first issues were worthwhile. They are now paying off in the position this publication enjoys as the scientific leader in its field. In any event we might add, its all been fun, and we hope the first 400 issues were the hardest.

NEWS BRIEFS

Dr. Melvin Schrier, New York City, contributed a paper on the

"Visual Problems of the Dentist." This appeared in the NEW YORK JOURNAL OF DENTISTRY, 26.6.234-235, 1956. Dr. Schrier is a member of the New York Academy of Optometry. His paper dealt with the near-point visual problems of the dentist and their correction. . . . Bausch & Lomb Optical Company, Rochester, have announced that their new Orthogon single vision uncut and semi-finished lens blanks will now measure 58 mm. by 60 mm. in size. This is a new indication of the larger lens sizes to appear in spectacles in the future. . . . Dr. Renato P. Pascual, superintendent of dental and optometrical education for the Department of Education, Philippines, has been in this country visiting dental and optometric educational centers. He spent a day on the campus of Illinois College of Optometry in Chicago. At present there is only one College of Optometry in the Islands. . . . Titmus Optical Company, Petersburg, Virginia, will market its plano protection glasses through professional channels only, according to H. F. Huttemeyer, sun glass sales manager for Titmus.

Children coming to the June, 1957, Congress of the American Optometric Association, Los Angeles, will spend a day at Disneyland. Mrs. Betty Barr is in charge of the children's program for the convention. In addition the children will have a Mexican party and a trip to Griffith Park Zoo. This all sounds like a real good time—I wish I could come along. . . . Dr. Phillip Jackman, Hackensack, New Jersey, has been appointed to the New Jersey State Board of Examiners in Optometry, by Governor Robert B. Meyner . . . and speaking of politicians, the Honorable Richard J. Daley, mayor of Chicago, dedicated the new Clinic building at Illinois College of Optometry on December 10. . . . Dr. Howard F. Haines, Columbus, assistant professor of optometry, School of Optometry, The Ohio State University, has been promoted to Brigadier General, 37th Division, Ohio National Guard. He will be Commanding General, Division of Artillery. He is a veteran of World War II and the Korean War. He attended the Academy meeting at Houston, but was not in uniform so we did not see his new "star." . . . Mr. H. B. Marton, F.B.O.A. (Hons) spoke on "Sight and the Brain" at the December 5, 1956, meeting of the British Chapter, American Academy of Optometry, in London.

Optometric Speakers Bureaus are being organized at the State Association level. This activity is under the supervision of Dr. Marilyn Brenne, Manitowoc, Wisconsin, chairman of the A.O.A. Speakers Bureau. According to Dr. Brenne, the formation of a strong speakers bureau at the State or local society level is the best answer to proper public relations in your home areas. . . . Dr. I. D. Spivack, New York

City, spoke on "Some Clinical Aspects of Perimetry" at the November meeting of the New York Academy of Optometry. . . . Dr. Harold Cline, Elkhart, Indiana, has been appointed to the faculty of Illinois College of Optometry as special Lecturer on Optometry by Dr. Alfred A. Rosenbloom, acting dean of the College. Dr. Cline, who is a member of the Academy, will continue his practice in Elkhart and will spend one day each week at the College. . . . Shuron Optical Company, Geneva, New York, will continue its program of national advertising in the mass media throughout 1957. They will use the SATURDAY EVENING POST and LIFE as the backbone of their campaign. . . . Dr. Morton L. Abram, vice-president of Illinois College of Optometry, spoke at the Career Conference, Lawrence College, Appleton, Wisconsin, on Optometry and Its Opportunities. . . . Marine's new loose-leaf catalogue of eyewear fashions for 1957 may be had by writing to the Marine Manufacturing Company, 28 Mahler St., Boston 31.

The American Optical Company, Instrument Division, Buffalo, announces the distribution of the new AO Rx Master Phoroptor which has, among its many features, special distance and near-point settings. These are made possible by what is called Ful-Vue Vergence, which provides special convergence adjustment for the optical axes and P.D. for testing at infinity and at the reading distance. Levers are provided to adjust the phoroptor into a converged position for near testing and to return the instrument into normal position for distance viewing. . . . The speakers at the Winter Symposium, California Optometric Association, January 9, Los Angeles, were Dr. William Smith, Massachusetts College of Optometry, Boston; Dr. Thaddeus R. Murroughs, Santa Barbara, and Dr. Max Schapero, Los Angeles College of Optometry, Los Angeles. Dr. Smith presented four papers as follows: "Developmental Anomalies of the Vertical Muscles"; "Clinical Methods in Pre-School Strabismus"; "Fundamental Steps in Orthoptic Procedure," and "General Clinical Observations." Dr. Muroughs presented three papers, these being, "The Rationalé of Strabismus Training, Diagnosis and Approach to Therapy"; "Favorable and Unfavorable Prognostic Pointers in the Cure of Strabismus," and "Role of Peripheral Field Training." Dr. Schapero also presented three papers. These were: "Abnormal Retinal Correspondence and Anomalous Projection"; "Treating Anomalous Correspondence," and "Role of Central Field Training." The meeting was held at the Ambassador Hotel. This sounds just like one of the Academy days at Houston.

NATIONAL BOARD OF EXAMINERS IN OPTOMETRY

The annual organizational meeting of the National Board of Examiners in Optometry was held December 11-12, 1956, at the University of Houston, Houston. The Board has announced that the 1955 and 1956 examination papers of the National Board will now be placed on sale. The price for each set of annual papers is $2.75, postage prepaid. The National Board of Examiners will supply all State Boards of Examiners and all optometry Schools and Colleges with copies of the 1956 National Board questions. The dates for the 1957 National Board examination were set as May 10-11. This examination will take place at all Schools and Colleges of optometry.

Dr. Harold M. Fisher, New York City, was re-elected president, and Dr. John R. Uglum, Mitchell, South Dakota, was re-elected secretary of the National Board. Dr. Jack Rust, Topeka, was elected vice-president. The officers and the following constitute the National Board: Dr. Bruce Jaques, Vista, California; Dr. Darrell Carter, College of Optometry, University of Houston; Dr. Rudolph Ehrenberg, Granite Falls, Minnesota, and Dr. Foster Namias, Massachusetts College of Optometry, Boston.

OBITUARY

LAURENCE P. FOLSOM, O.D., 1895-1956

Dr. Laurence P. Folsom, optometrist and director of the Distinguished Service Foundation of Optometry, South Royalton, Vermont, died on December 6, 1956, aged 61. Dr. Folsom was a graduate of the Massachusetts College of Optometry, class of 1916. During an active optometric career he served on the Vermont State Board of Examiners in Optometry and as an officer of the International Association of Boards of Examiners in Optometry. For many years he served as secretary to the Distinguished Service Foundation and more recently as its director. Dr. Folsom was a member of the American Academy of Optometry, Beta Sigma Kappa and the American Optometric Association. He is survived by his widow.

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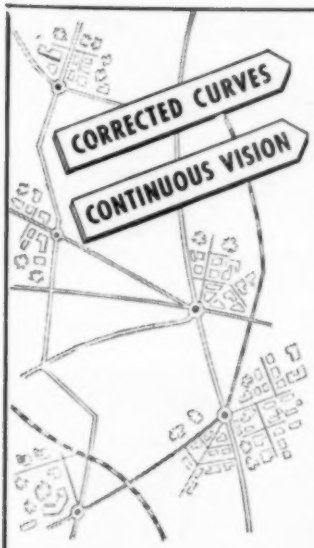

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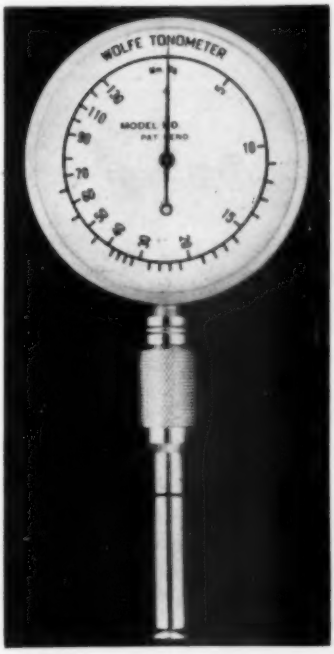

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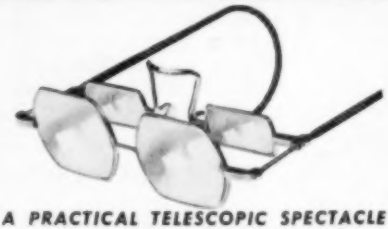

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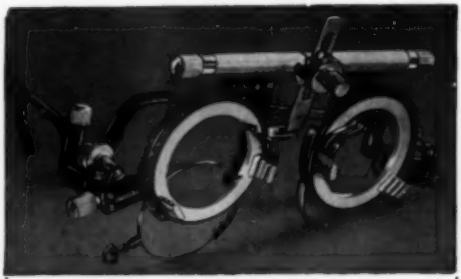

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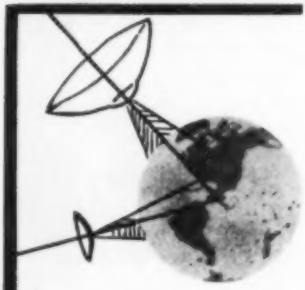

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